ON THE COMPLETE SOLUTION TO THE MOST GENERAL FIFTH DEGREE POLYNOMIAL

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Dedicated to Erland Samuel Bring
The first great pioneer into the solution to the equation to the fifth degree.

ABSTRACT

The motivation behind this note, is due to the non success in finding the complete solution to the General Quintic Equation. The hope was to have a solution with all the parameters precisely calculated in a straight forward manner. This paper gives the closed form solution for the five roots of the General Quintic Equation. They can be generated on Maple V, or on the new version Maple VI. On the new version of maple, Maple VI, it may be possible to insert all the substitutions calculated in this paper, into one another, and construct one large equation for the Tschirnhausian Transformation. The solution also uses the Generalized Hypergeometric Function which Maple V can calculate, robustly.

INTRODUCTION

It has been known since about 2000 BC, that the Mesopotamians have been able to solve the Quadratic Equation with the Quadratic Formula [Young, 1]. It took until 1545 AD, for Cardano to publish his solution for the Cubic Equation, in his "Artis magnae sive de regulis algebraicis". But it was actually Tartaglia who did the original work to solve the cubic. Cardano's roommate, Ferrari (in Cardano's Ars magna), solved the Quartic Equation at about the same time Cardano solved the Cubic Equation. Tartaglia fought ferociously against Cardano, Ferrari, and Sciopone Ferro, for stealing his solution of the Cubic Equation. This situation was filled with perjury, disputation, and bitterness. Finally, Cardano was thrown into prison by the inquisition for heresy, for making the horoscope of Christ[Guerlac, 2].

Erland Samuel Bring (1786), was the first person to perform a Tschirnhausian Transformation to a quintic equation, successfully. He transformed a quintic with the fourth and third order terms missing, i.e. $x^5+px^2+qx+r=0$, to the Bring Form $x^5-x-s=0$ [Bring, 3]. This work was disputed by the University of Lund, and was lost in the university's archives. I do not know if an original

copy still exists, there may still be one in an observatory in Russia[Harley, 4]. It might be worth finding this document, for history's sake, since I think Jerrard came along at a later date, and claimed it as his own. The quest of a lot of the 19th century mathematicians was to solve the Quintic Equation. Paolo Ruffini (1803) gave a proof that the Quintic is not solvable with radicals. Neils Henrik Abel(1824) gave a more rigorous proof, of the same thing. Evartiste Galois(1830) invented group theory, and also showed the same impossibility as Ruffini and Abel. Group Theory and Modular Functions would prove to be the mathematical framework by which Bring's Equation was first solved [Young, 1], [Guerlac, 2]. In 1858, using Elliptic Modular Functions, Hermite solves Bring's Equation. Kronecker, Gordan, Brioshi and Klein also gave solutions to Bring's Equation closely after. For a good review and further references see [Weisstein, 5], [King, 6] and [Klein, 7].

Of all the people that have solved Bring's Equation, or another normal form, Klein's work seems to be the one that has the closest thing to a complete solution to the General Quintic Equation. None of the above solutions include Bring's Tranformation, to his normal form, and leave too many parameters still to be calculated. I was looking for a simple closed form solution which is easy to use, like the Quadratic Formula, so I may substitute it into another set of equations and formulas I am working on. This ruled out iteration methods, and other approximation schemes. Then I looked at Modular Function techniques, but these techniques leave too many parameters to calculate, and are complicated with intricate steps that depend on the properties of Modular Functions. Also, most solutions which use Modular Functions, require a Modular Function still to be inverted through the Hypergeometric Equation before a solution could be obtained. Hermite's solution does not require this inversion. He does calculate an elliptic nome, which he then inserts into a Modular Function he defines. But it seems that these functions have a different period that what he claimed. It also seems like the Russians or Weber realized this and were doing same thing as Hermite with Weber's modular functions, f1, f2 and f, but this also requires the inversion of f [Prasolov, Solovyev, 8]. What is desirable, is to have just a two or three step process to obtain the n roots of the nth degree polynomial [Cockle, 9 and 10], [Harley, 11], [Cayley, 12]. So here we use only a three step process to extract the roots from the General Quintic: 1) a Tshirnhausian Transformation to Bring's equation; 2) the solution to a generalized hypergeometric differential equation to solve Bring's Equation; 3) and undo the Tschirnhausian Tranformation using Ferrari's method to solve the Tschirnhausian Quartic.

THE TSCHIRNHAUSIAN TRANSFORMATION TO BRING'S NORMAL FORM

The initial Tshirnhausian Transformation I use is a generalization of Bring's [Bring, 3], but a simplification of Cayley's [Cayley, 13], with a quartic substitution,

$$Tsh1 := x^4 + dx^3 + cx^2 + bx + a + y$$

to the General Quintic Equation,

$$Eq1 := x^5 + m x^4 + n x^3 + p x^2 + q x + r$$

Then by the process of elimination between Tsh1 and Eq1, the following 25 equations are obtained,

$$M15 := 1$$
 $M14 := d$
 $M13 := c$
 $M12 := b$
 $M11 := a + y$
 $M25 := m - d$
 $M24 := n - c$
 $M23 := p - b$
 $M22 := -y + q - a$
 $M21 := r$
 $M35 := n + dm - m^2 - c$
 $M34 := p - b - mn + dn$
 $M33 := q - a - mp - y + dp$
 $M32 := r - mq + dq$
 $M31 := dr - mr$
 $M45 := -cm - m^3 + b - p + dm^2 + 2mn - dn$
 $M44 := a + dmn + y - dp - m^2n - q + n^2 + mp - cn$
 $M43 := mp - r + dmp - dq + mq - m^2p - cp$
 $M42 := mr - dr - m^2q - cq + dmq + nq$
 $M41 := -m^2r - cr + nr + dmr$

$$M55 := b m - 2 m p + q - y + c n - 2 d m n - a + 3 m^2 n - c m^2 + d m^3 - n^2 - m^4 + d p$$

$$M54 := -d\,m\,p + d\,m^2\,n + c\,p + d\,q + 2\,m\,n^2 - c\,m\,n - m^3\,n - 2\,n\,p - m\,q + m^2\,p + b\,n - d\,n^2 + r$$

$$M53 := c\,q + 2\,m\,n\,p - d\,n\,p - p^2 + b\,p - n\,q + d\,m^2\,p - m\,r - d\,m\,q - c\,m\,p + m^2\,q \\ - m^3\,p + d\,r$$

$$M52 := b\,q - c\,m\,q - n\,r - d\,m\,r - d\,n\,q + c\,r + m^2\,r - m^3\,q + 2\,m\,n\,q - p\,q + d\,m^2\,q$$

$$M51 := b\,r - m^3\,r - d\,n\,r + d\,m^2\,r + 2\,m\,n\,r - p\,r - c\,m\,r$$

these equations are then substituted into the five by five matrix,

$$AA := \begin{bmatrix} M11 & M12 & M13 & M14 & M15 \\ M21 & M22 & M23 & M24 & M25 \\ M31 & M32 & M33 & M34 & M35 \\ M41 & M42 & M43 & M44 & M45 \\ M51 & M52 & M53 & M54 & M55 \end{bmatrix}$$

taking the determinant of this matrix generates the polynomial which will be reduced to Bring's Equation. Let this polynomial be set to zero and solved, by

first by transforming to the Bring's Form. All the substitutions that are derived, transform poly into Bring's form identically. Each step was checked and found to go to zero, identically.

Let the transformed polynomial, poly = det(AA), have the form,

$$poly:=y^5+Poly4\;y^4+Poly3\;y^3+Poly2\;y^2+A\,y+B$$
 setting Poly4 = 0, and solving for a, gives

Setting Foly4 = 0, and solving for a, gives
$$a := \frac{1}{5} d m^3 + \frac{1}{5} b m - \frac{3}{5} d m n - \frac{2}{5} n^2 + \frac{4}{5} q - \frac{1}{5} c m^2 + \frac{2}{5} c n - \frac{4}{5} m p + \frac{4}{5} m^2 n + \frac{3}{5} d p - \frac{1}{5} m^4$$
Substituting a, and the substitutions,

$$b := \alpha d + \xi$$
$$c := d + \eta$$

back into poly, and consider Poly3 and Poly4 as functions of d. Poly3 is quadratic in d, i.e.

$$\begin{aligned} Poly3 &:= \left(\left(-\frac{2}{5}\,m^2 + n \right) \alpha^2 + \left(\frac{17}{5}\,m^2\,n - \frac{17}{5}\,m\,p + \frac{4}{5}\,m^3 - 2\,n^2 - \frac{13}{5}\,n\,m - \frac{4}{5}\,m^4 + 3\,p + 4\,q \right) \alpha \\ &+ \frac{22}{5}\,m^2\,p + \frac{21}{5}\,m\,p\,n - \frac{19}{5}\,p\,n + \frac{12}{5}\,n\,m^4 + 5\,r - \frac{2}{5}\,m^6 - \frac{18}{5}\,n^2\,m^2 + 2\,q + \frac{19}{5}\,n^2\,m \\ &- 4\,m^3\,n + \frac{8}{5}\,m^2\,n + 3\,q\,m^2 - 3\,m\,r - \frac{3}{5}\,p^2 - 3\,n\,q - 5\,q\,m - 2\,m\,p - \frac{2}{5}\,m^4 \\ &- \frac{12}{5}\,m^3\,p + n^3 + \frac{4}{5}\,m^5 - \frac{3}{5}\,n^2\right)d^2 + \left(\left(-\frac{4}{5}\,m^2\,\xi + \frac{21}{5}\,m^2\,p - \frac{21}{5}\,m^3\,n - 5\,p\,n \right. \\ &- \frac{13}{5}\,\eta\,m\,n + 2\,n\,\xi + \frac{4}{5}\,\eta\,m^3 - \frac{21}{5}\,q\,m + \frac{23}{5}\,n^2\,m + \frac{4}{5}\,m^5 + 3\,\eta\,p + 5\,r\right)\alpha + \frac{26}{5}\,q\,m^2 \\ &- \frac{26}{6}\,m^3\,p + \frac{52}{5}\,m\,p\,n + 4\,q\,\xi - 6\,m\,r - \frac{22}{5}\,n\,q - 7\,n^2\,m^2 - \frac{4}{5}\,m^4\,\xi + \frac{17}{5}\,m^2\,n\,\xi \\ &- \frac{17}{5}\,m\,p\,\xi - \frac{4}{5}\,m^4 + 4\,\eta\,q - \frac{6}{5}\,\eta\,n^2 - \frac{4}{5}\,m^6 + 7\,m^2\,r + \frac{4}{5}\,m^7 - 3\,p^2 - 2\,n^2\,\xi \\ &- \frac{31}{5}\,q\,m^3 + \frac{28}{5}\,m^4\,p - 4\,\eta\,m\,p + \frac{4}{5}\,m^5\,\eta + \frac{19}{5}\,n^2\,m\,\eta - \frac{28}{5}\,m^5\,n + 5\,r\,\eta \\ &+ \frac{16}{5}\,\eta\,m^2\,n + \frac{58}{5}\,q\,m\,n - \frac{81}{5}\,m^2\,p\,n + \frac{56}{5}\,n^2\,m^3 - \frac{23}{5}\,p\,q + \frac{23}{5}\,m\,p^2 - \frac{13}{5}\,n\,m\,\xi \\ &+ 3\,p\,\xi + \frac{4}{5}\,m^3\,\xi + \frac{22}{5}\,p\,m^2\,\eta - 5\,m\,q\,\eta - \frac{19}{5}\,p\,n\,\eta - \frac{29}{5}\,n^3\,m - 7\,n\,r + \frac{24}{5}\,n\,m^4 \\ &+ \frac{29}{5}\,p\,n^2 + \frac{6}{5}\,n^3 - 4\,m^3\,n\,\eta\right)d + 5\,r\,\xi + n\,\xi^2 + \frac{16}{5}\,q\,m^4 + 2\,q\,\eta^2 - 5\,p\,n\,\xi \\ &- 7\,n^2\,m^2\,\eta - \frac{21}{5}\,q\,m\,\xi + \frac{52}{5}\,m\,p\,n\,\eta - \frac{2}{5}\,m^4\,\eta^2 + \frac{21}{5}\,m^2\,p\,\xi + \frac{4}{5}\,m^5\,\xi - \frac{2}{5}\,m^2\,\xi^2 \\ &- \frac{2}{5}\,q^2 + \frac{16}{5}\,m^6\,n + \frac{26}{5}\,q\,m^2\,\eta - 4\,p\,r - \frac{26}{5}\,m^3\,p\,\eta - \frac{22}{5}\,q\,n\,\eta + \frac{6}{5}\,n^3\,\eta - 3\,p^2\,\eta \\ &+ \frac{32}{5}\,n^3\,m^2 - 2\,m\,p\,\eta^2 - \frac{21}{5}\,m^3\,n\,\xi + \frac{4}{5}\,m^3\,\eta\,\xi - \frac{3}{5}\,n^4 - \frac{3}{5}\,n^2\,\eta^2 + \frac{23}{5}\,n^2\,m\,\xi \\ &+ 3\,p\,\eta\,\xi + \frac{12}{5}\,n^2\,q - \frac{2}{5}\,m^8 - \frac{52}{5}\,m\,p\,n^2 - \frac{13}{5}\,n\,m\,\eta\,\xi - \frac{4}{5}\,m^6\,\eta - 4\,m^3\,r - \frac{16}{5}\,m^5\,p \\ &- \frac{22}{5}\,m^2\,p^2 + \frac{24}{5}\,n\,\eta\,m^4 + \frac{24}{5}\,m\,p\,q + \frac{8}{5}\,n\,m^2\,\eta^2 - \frac{44}{5}\,m^2\,n\,q + 8\,m\,n\,r + 4\,n\,p^2 \\ &- 8\,n^2\,m^4 + \frac{64}{5}\,m^3\,p\,n - 6\,m\,r\,\eta \end{aligned}$$

Setting Poly3 to zero by setting each coefficient multiplying each power of d equal to zero. The d^2 term is multiplied by a Quadratic Equation in alpha, solving for alpha gives,

$$\alpha := \frac{1}{2} (-13 \, n \, m - 10 \, n^2 + 4 \, m^3 + 20 \, q + 17 \, m^2 \, n - 4 \, m^4 + 15 \, p - 17 \, m \, p + \text{sqrt} (-40 \, q \, m^4 + 80 \, q \, m^2 + 40 \, m^3 \, p + 60 \, n \, p^2 - 15 \, n^2 \, m^4 - 190 \, m \, p \, n - 200 \, n \, q - 15 \, n^2 \, m^2 + 400 \, q^2 + 60 \, n^3 \, m^2 - 100 \, n^2 \, q - 80 \, m \, p \, n^2 + 200 \, m^2 \, r + 225 \, p^2 - 120 \, m^3 \, r + 40 \, m^5 \, p + 265 \, m^2 \, p^2 - 40 \, q \, m^3 - 80 \, m^4 \, p - 20 \, q \, m \, n + 360 \, m^2 \, p \, n + 30 \, n^2 \, m^3 + 600 \, p \, q - 510 \, m \, p^2 - 120 \, n^3 \, m - 680 \, m \, p \, q + 260 \, m^2 \, n \, q + 300 \, m \, n \, r - 500 \, n \, r + 80 \, p \, n^2 - 170 \, m^3 \, p \, n + 60 \, n^3))/(2 \, m^2 - 5 \, n)$$

so alpha is just a number calculated directly from the coefficients of the Quintic. Now the coefficient multiplying the linear term in d is also linear in both eta and xi, solving it for eta and substituting this into the zeroth term in d, gives a Quadratic Equation only in xi, i.e. let

$$zeroth_term_in_d := \xi 2 \xi^2 + \xi 1 \xi + \xi 0$$

with the equations for xi2, xi1, and xi0 given in the appendix (see the example given). xi is given by the Quadratic Formula,

$$\xi := \frac{1}{2} \frac{-\xi 1 + \sqrt{\xi 1^2 - 4\xi 2\xi 0}}{\xi 2}$$

Poly2 is cubic in d, setting it to zero, and using Cardano's Rule(on Maple) to solve for d, gives,

$$\begin{split} d := & \frac{1}{6} (36 \ d1 \ d2 \ d3 - 108 \ d0 \ d3^2 - 8 \ d2^3 \\ & + 12 \sqrt{3} \sqrt{4 \ d1^3 \ d3 - d1^2 \ d2^2 - 18 \ d1 \ d2 \ d3 \ d0 + 27 \ d0^2 \ d3^2 + 4 \ d0 \ d2^3 \ d3)^{(1/3)} / d3 \\ & - \frac{2}{3} (3 \ d1 \ d3 - d2^2) / (d3 (36 \ d1 \ d2 \ d3 - 108 \ d0 \ d3^2 - 8 \ d2^3 \\ & + 12 \sqrt{3} \sqrt{4 \ d1^3 \ d3 - d1^2 \ d2^2 - 18 \ d1 \ d2 \ d3 \ d0 + 27 \ d0^2 \ d3^2 + 4 \ d0 \ d2^3 \ d3)^{(1/3)}) \\ & - \frac{1}{3} \frac{d2}{d3} \end{split}$$

where d0, d1, d2, d3, and d4 are given in the example in the appendix. With these substitutions the transformed Quintic, poly, takes the form y⁵+Ay+B =0 where A and B are generated by maple's determinant command(these are also in the example given in the appendix).

Then with a linear transformation the transformed equation $y^5+Ay+B=0$, becomes $z^5-z-s=0$, where

$$y := (-A)^{(1/4)} z$$
$$s := -\frac{B}{(-A)^{(5/4)}}$$

We have used the fact that Poly4 is linear in a to get Poly4 = 0. Then b,c and d were considered a point in space, on the curve of intersection of a quadratic surface, Poly3, and a cubic surface, Poly2. Giving Poly3 = Poly2 = 0, as required [Cayley, 13], [Green, 14] and [Bring, 3].

THE SOLUTION TO BRING'S NORMAL FORM

Bring's Normal Form is solvable. Any polynomial that can be transformed

to $z^n-az^m-b=0$ can be solved with the Hypergeometric Equation[Weisstein,5]. The solution is given by considering z=z(s) and differentiating $z^5-z-s=0$ w.r.t. s four times. Then equate the fourth, third, second, first and zeroth order differentials, multiplied by free parameters, to zero[Cockle, 8 and 9],[Harley, 10],[Cayley, 11]. Then make the substitution $s^4=t$. The resulting equation is a Generalized Hypergeometric Equation of the Fuchsian type[Slater, 15], with the following solution [Weisstein, 5],

$$z:=-s\,\mathrm{hypergeom}([\frac{3}{5},\,\frac{2}{5},\,\frac{1}{5},\,\frac{4}{5}],\,[\frac{5}{4},\,\frac{3}{4},\,\frac{1}{2}],\,\frac{3125}{256}\,s^4)$$

Now calculating y, with

$$y := (-A)^{(1/4)} z$$

We now undo the Tschirnhausian Transformation by substituting d, c, b, a and y into the quartic substitution, Tsh1. The resulting Quartic Equation is then solved using Ferrari's method[King, 6], this gives the following set of equations,

$$\begin{split} g &:= \frac{1}{12} (-36 \, c \, d \, b - 288 \, y \, c - 288 \, a \, c + 108 \, b^2 + 108 \, a \, d^2 + 108 \, y \, d^2 + 8 \, c^3 + 12 \mathrm{sqrt}(18 \, d^2 \, b^2 \, y + 18 \, d^2 \, b^2 \, a - 3 \, d^2 \, b^2 \, c^2 + 576 \, d \, b \, a^2 + 576 \, d \, b \, y^2 + 768 \, y \, a \, c^2 \\ &- 432 \, y^2 \, c \, d^2 - 432 \, y \, c \, b^2 + 1152 \, d \, b \, y \, a + 240 \, d \, b \, y \, c^2 + 240 \, d \, b \, a \, c^2 \\ &- 54 \, c \, d^3 \, b \, a - 54 \, c \, d^3 \, b \, y - 864 \, y \, c \, a \, d^2 - 432 \, a \, c \, b^2 - 2304 \, y^2 \, a + 12 \, y \, d^2 \, c^3 \\ &+ 12 \, d^3 \, b^3 + 12 \, a \, d^2 \, c^3 + 162 \, a \, d^4 \, y - 432 \, a^2 \, c \, d^2 - 48 \, a \, c^4 + 384 \, a^2 \, c^2 - 48 \, y \, c^4 \\ &- 2304 \, y \, a^2 + 384 \, y^2 \, c^2 + 81 \, y^2 \, d^4 + 81 \, a^2 \, d^4 + 12 \, b^2 \, c^3 + 81 \, b^4 - 768 \, y^3 \\ &- 54 \, c \, d \, b^3 - 768 \, a^3))^{(1/3)} - 12 \big(\frac{1}{12} \, d \, b - \frac{1}{3} \, y - \frac{1}{3} \, a - \frac{1}{36} \, c^2 \big) \, \Big/ \big(-36 \, c \, d \, b \\ &- 288 \, y \, c - 288 \, a \, c + 108 \, b^2 + 108 \, a \, d^2 + 108 \, y \, d^2 + 8 \, c^3 + 12 \, \mathrm{sqrt}(18 \, d^2 \, b^2 \, y \\ &+ 18 \, d^2 \, b^2 \, a - 3 \, d^2 \, b^2 \, c^2 + 576 \, d \, b \, a^2 + 576 \, d \, b \, y^2 + 768 \, y \, a \, c^2 - 432 \, y^2 \, c \, d^2 \\ &- 432 \, y \, c \, b^2 + 1152 \, d \, b \, y \, a + 240 \, d \, b \, y \, c^2 + 240 \, d \, b \, a \, c^2 - 54 \, c \, d^3 \, b \, a \\ &- 54 \, c \, d^3 \, b \, y - 864 \, y \, c \, a \, d^2 - 432 \, a \, c \, b^2 - 2304 \, y^2 \, a + 12 \, y \, d^2 \, c^3 + 12 \, d^3 \, b^3 \\ &+ 12 \, a \, d^2 \, c^3 + 162 \, a \, d^4 \, y - 432 \, a^2 \, c \, d^2 - 48 \, a \, c^4 + 384 \, a^2 \, c^2 - 48 \, y \, c^4 - 2304 \, y \, a^2 \\ &+ 384 \, y^2 \, c^2 + 81 \, y^2 \, d^4 + 81 \, a^2 \, d^4 + 12 \, b^2 \, c^3 + 81 \, b^4 - 768 \, y^3 - 54 \, c \, d \, b^3 - 768 \, a^3) \big) \\ (1/3) \, + \, \frac{1}{6} \, c \, b \, d^3 \, d^$$

$$e := \sqrt{\frac{1}{4} d^2 + 2g - c}$$
$$f := \frac{1}{2} \frac{dg - b}{e}$$

 $f:=\frac{1}{2}\,\frac{d\,g-b}{e}$ This gives four roots y1, y2, y3, and y4. These are then substituted back into the Tschirnhausian Quartic to see which one satisfies it. The root that satisfies it, will also satisfy the General Quintic Equation, Eq1[Prasolov and Solovyev, 8]. Let this root be r1. It is the root that satisfies both the Quartic Tshirnhausian Transformation and General Quintic Equation. This root varies as function of the parameters m, n, p, q, and r. Another way of keeping track of

which root satisfies Quintic and Quartic, one could make a five column spread sheet or a five dimensional plot of m, n, p, q and r. Once the root that satisfies the quintic is determined, the other four roots of the quintic are obtained by factoring out the root just obtained, this gives the following equations,

$$r1 := yN$$

$$N \in [1, 2, 3, 4]$$

$$dd := m + r1$$

$$cc := n + r1^{2} + m r1$$

$$bb := p + r1 n + r1^{3} + m r1^{2}$$

$$aa := q + r1 p + r1^{2} n + r1^{4} + m r1^{3}$$

Where x⁴+ddx³+ccx²+bbx+aa=0 was solved using Ferrari's method. This gives the other four roots of the General Quintic Equation, r2, r3, r4 and r5. The last step to do is to just check and make sure that they satisfy the original Quintic, and of course they do! Now we have the five roots of the most general fifth degree polynomial in a closed form. To write them all down on a piece of paper, one would need, a piece of paper the size of large asteroid. But these days with computers with such large memories, this can be done quite easily. Now one might say what is the purpose of doing this? Why make monstrous equations like this? Surely this must be useless? The answer to these questions is quite simple! Was the quadratic equation important and all the associated geometry of parabolas, circles hyperbolas, ..etc? Were the cubic and quartic solutions important in calculating arcs of ellipses, lemniscate curves, pendulum motion, precession of planetary orbits, etc.. Now having the equation for the roots of the quintic, we can investigate it's properties and begin to use it to solve physical problems. I think it is quite exciting that with the help of computer algebra we can attack the non-linear problems of physics and mathematics much more easily than in the days of Jacobi, Bring, Abel, Cayley,..etc. I hope that actually calculating the roots has dispelled the common believe of most people I have talked to, that "it is impossible to calculate the roots of the General Quintic Equation in a closed form". Now I will put an end to this little project, by showing a maple session as an example in the appendix. The other cases in the appendix(m=0 and n=0) work as well, I do not want to waste time and space here by doing them.. In the appendix I calculate the roots of an arbitrary General Quintic. I will let the reader load up the other equations on his/her computer, and see for themselves that they, in fact, do work.

These roots actually satisfy the Quintic identically, but the computer ran out memory space. This equation which calculates the roots of the Quintic, was checked with various values of the parameters m, n, p, q and r. It works for all values except one. When m=0. This is probably because all the equations above really need to be put into one another then the division by zero cancels. So below, I diveded the calculation into three cases only to avoid having the computer divide by zero. When all the equations are put together, I get a Maple error saying "Object Big Prod". Maple probably has a memory protection limit built into it. Once this is removed, then run on a computer

with a larger memory, then all the above equations may be substituted into one another. Also the final equation with all the substitutions completed, may be decrease in size, due to cancellations. The creators of Maple tell me that this is going to be accomplished with the next version of Maple, Maple VI.

APPENDIX

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> EXAMPLE: A MAPLE SESSION
> restart;
> Digits := 200:
       m := -200*I;
                                                                                                         m := -200 I
> n := 1340;
                                                                                                             n := 1340
       p := 1.23491*10^1;
                                                                                                        p := 12.34910
           q := -2.39182*10^2;
                                                                                                   q := -239.18200
> r := 3.3921817*10^2;
                                                                                                 r := 339.2181700
             To avoid having the computer divide by zero, the calculation
of
             alpha, eta, and xi is divided into three cases: 1) m and n not
equal to zero 2) m equal to zero and n not 3) both m and n equal
to zero. The
> last one is Bring's original transformation.
            m and n not equal to zero
             alpha :=
             evalf(1/2*(-13*m*n-10*n^2+4*m^3+20*q+17*m^2*n-4*m^4+15*p-17*m*p+sqrt(-10*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+17*m^2+
             680*q*m*p+200*m^2*r+30*m^3*n^2+360*p*m^2*n-80*m^4*p-500*n*r+260*q*m^2*n-2*n-80*m^4*p-500*n*r+260*q*m^2*n-2*n-20*m^2*n-2*n-2*n-20*m^2*n-2*n-20*m^2*n-2*n-20*m^2*n-2*n-20*m^2*n-2*n-20*m^2*n-2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n-20*m^2*n
             n-190*m*n*p-80*m*p*n^2-15*n^2*m^4+60*n^3*m^2+80*p*n^2+60*n^3-170*m^3*n
             *p-200*n*q+80*m^2*q+40*m^5*p-100*q*n^2+400*q^2-120*m^3*r+225*p^2+265*m
              ^2*p^2+300*m*n*r-40*q*m^4+60*n*p^2+600*p*q-15*m^2*n^2+40*m^3*p-510*m*p
           ^2-120*m*n^3-40*m^3*q^2-20*m*n*q))/(2*m^2-5*n)):
           evalf(580*m^3*p*alpha^2*n-80*m^5*p*alpha^2+1500*m^3*p^2*alpha+5200*m^2
          *n^3*q+1360*m^6*n*q+1600*q^2*m^2*alpha+5000*q^2*m*n-4000*q^3+3200*q*n^
> 3*alpha-320*q*m^6*alpha-5775*m*p^2*n*alpha-4065*m^4*n^2*q-6625*m^2*n*q
           ^2-5625*q*m*p^2+3285*m^2*p^2*q+5820*m^4*p^2*n-160*q*m^4*alpha^2-8020*m
```

^2*p^2*n^2-1580*m^4*p^2*alpha+310*m*p*n^4+3300*m*p*q^2+860*m^7*p*n-360 *m^5*p*q+5895*q*m^3*n^2-4000*q^2*n*alpha+1040*q*m^4\delta-1990*q*m^2*n^2-2 $a-375*n^2*m^2*r-1500*n^3*m*r+1000*n^2*p*r+375*n^2*m^3*r-5000*n*q*r+495$ 0*m^2*p^3-400*q*m*p*n*alpha+760*q*m^4*p+320*q*m^5*alpha-2820*m^5*p*n^2 $+2585*m^3*p*n^3+3800*q*n^2*p-2000*q^2*m^3-5300*q*m*n^3+2250*q*p^2-2250*q*p^3+2250*q*p^3+2250*q*p^3+2250*q^3+250*q^3+25$ $m*p^3+30*n^2*m^4*alpha^2-160*q*m^6-850*m^4*p^2+160*m^8*p-80*m^7*p+104$ $5*n^3*p^2-2000*n*q^2-3125*n*r^2+1500*n^3*r+1200*n^3*q-400*q*m^3*p+60*n$ ^2*m^6*alpha+7055*m^2*p^2*n*alpha-1485*n^4*m^3+525*n^4*m^2+800*m^2*q^2 +1250*m^2*r^2-240*n^3*m^4+540*n^3*m^5+5625*p^2*r+1780*m^5*p^2-195*n^3* m^2*alpha^2-675*n^2*p^2+300*n^4*alpha^2+320*q*m^7-600*n^5*alpha-2005*n ^3*m^2*p+800*q*m^2*alpha^2*n+435*n^3*m^3*alpha-780*n^4*m*alpha+2600*q* $m*n^2*alpha+2000*m^2*q*r+1000*m^3*r*p-450*m^2*p^2*alpha^2-4275*p^3*n-6$ $0*n^2*m^7-1140*n^4*p-1000*m^4*p*r+3375*p^3*alpha-950*m*p*n^2*alpha^2+1$ $140*n^5*m-500*m^3*q*r+30*n^2*m^6+7885*n^2*m*p^2-160*m^8*q+5200*n^2*q^2$ $-60*n^2*m^5*alpha-2200*n^4*q+4230*n^2*m^4*p+1650*m^4*q^2+30*m^8*n^2-11$ $55*m^2*n^5+7500*q*p*r+990*m^4*n^4-300*m^6*n^3+4500*q*p^2*alpha-5700*q*p^$ p^2*n-1840*q*m^3*n*alpha+280*m^3*p*q*n+900*n^3*alpha*p-6375*m*p^2*r-38 25*m*p^3*alpha+4845*m*p^3*n-1170*q*m^2*n*p-30*n^3*m*p-3000*q*n*alpha*p $a-1490*n^2*m^3*p+100*q*m*n*p+160*m^6*alpha*p+700*m^5*n*p-4750*n*r*m*p-4750*n*r*n*p-4750*n*r*n*p-4750*n*r*n*p-4750*n*r*n*$ 1560*m^6*n*p+4500*n*m^2*p*r-250*n*m*q*r+1200*q*m^2*alpha*p-3375*n^2*m^ 3*p*alpha+3700*n*m^2*p^2+2160*q*m^4*n*alpha-4500*q*m^2*n^2*alpha-930*m ^6*p^2-9440*n*m^3*p^2+880*n^3*m*p*alpha+2245*n^2*m^2*alpha*p-80*m^9*p+ 1440*m^5*p*n*alpha-2720*m^3*p^3-1280*m^4*n*alpha*p-1000*q*n^2*alpha^2+ 300*n^6): xi2 := $a*q*r-480*m^8*alpha*q+4875*p^2*alpha*n*r-990*m^5*alpha*n^4+1800*m^4*alpha*n^4*alpha*$ $\label{lem:pha2*q*p-600*n^4*alpha^2*p+4750*n^2*alpha^2*p^2*m+160*m^8*alpha*r-191} \\ \text{pha^2*q*p-600*n^4*alpha^2*p+4750*n^2*alpha^2*p^2*m+160*m^8*alpha*r-191} \\ \text{pha^2*q*p-600*n^4*alpha^2*p+4750*n^2*alpha^2*p^2*m+160*m^8*alpha*r-191} \\ \text{pha^2*q*p-600*n^4*alpha^2*p+4750*n^2*alpha^2*p^2*m+160*m^8*alpha*r-191} \\ \text{pha^2*p+4750*n^2*alpha^2*p+4750*n^2*alpha^2*p^2*m+160*m^8*alpha*r-191} \\ \text{pha^2*p+4750*n^2*alpha^2*p+4750*n^2*alpha^2*p^2*m+160*m^8*alpha*r-191} \\ \text{pha^2*p+4750*n^2*alpha^2*p+4750*n^2*alpha^2*p^2*m+160*m^8*alpha*r-191} \\ \text{pha^2*p+4750*n^2*alpha^2*p+4750*n^2*alpha^2*p^2*m+160*m^8*alpha*r-191} \\ \text{pha^2*p+4750*n^2*alpha^2*p+4750*n^2*alpha^2*p^2*m+160*m^8*alpha*r-191} \\ \text{pha^2*p+4750*n^2*alpha^2*p+4750*n^2*alpha^2*p^2*m+160*m^8*alpha*r-191} \\ \text{pha^2*p+4750*n^$ $0*n^3*alpha^2*p*m^2+240*m^7*alpha^2*q-4860*m^5*alpha*q^2+120*m^5*alpha$ ^2*p^2+60*m^5*alpha^2*n^3-15000*p*alpha*q*r-4680*m^7*alpha*q*n-7600*p^ 2*alpha*m^2*r-3900*n^3*m*alpha*r+240*m^7*alpha*p^2+1500*n^3*alpha^2*r+ 12600*q^2*alpha*m*p-160*n*alpha^2*r*m^4+600*n^5*alpha^2*m-19250*m*n^2* r^2+27500*n*p*q*r+4500*p*alpha*n^2*r+5100*p^2*alpha*q*n-200*m^6*alpha^ $2*n*p-2220*n^3*p*q-8700*n^3*p*r+3420*m^6*alpha*n^2*p+26250*n*p*r^2+340*n^2*p+26250*n^2*p$ $0*n*p*q^2-14750*m^2*p*r^2-400*m^8*alpha*n*p-10980*m^4*alpha*q*n^2+280*m^4$ m^7*p*r-2250*p^3*alpha^2*n-520*m^5*alpha*r*p-1800*p^2*alpha*n^3+900*p^ 3*alpha^2*m^2-9375*p*alpha*r^2+14820*m^5*alpha*q*n^2+6000*r*q*n^2+1600 7*alpha*n*p-500*m^2*n*r^2-3020*m^5*alpha*p*n^2-280*m^6*n*r-640*m^4*n^2 *r-4560*m*n^5*p+8700*m*n^4*r-120*m^6*alpha*n^3-600*m^6*alpha*n*r-1920* $\label{localization} $$m^5*alpha^2*q*n+1360*m^4*alpha^2*n^2*p-840*m^4*alpha*n^2*r-7320*m^4*al}$ $pha*n^3*p+870*m^4*alpha*n^4+3360*m^4*alpha*q^2-3720*m^7*p*n^2+4500*n^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*n^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*n^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*n^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*n^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*n^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*n^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*n^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*n^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*n^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*m^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*m^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*m^2+3800*m^4*alpha*q^2-3720*m^7*p*n^2+4500*m^2+3800*m^2+3$ *alpha^2*m^3*q+14050*m*n^3*p*r+1700*n^2*alpha^2*q*p-10095*p^2*m*q^2-10 920*q^2*alpha*m^2*n-700*n^2*alpha^2*m^2*r+11000*m*p*q*r-2200*n*alpha^2 $m^3*p^2-3380*m^5*p^2*n-4350*p^3*m^2*q-870*m^2*p*n^4-2560*m^3*p*n^4-30*p^3*m^2*p^2*n^4-2560*m^3*p^2*n^4-30*p^3*m^2*p^2*n^4-2560*m^3*p^2*n^4-30*p^3*m^2*p^2*n^4-2560*m^3*p^2*n^4-2560*m^2*n^4-2560*m^3*p^2*n^4-2560*m^3*p^2*n^4-2560*m^3*p^2*n^4-2560*m^2*n^2*n^4-2560*m^2*n^4-256$ 00*n^3*alpha^2*m*q-4000*m^3*alpha*q*r+4200*n*alpha^2*m*q^2-1000*m^2*p^ $2*r-5000*n*alpha^2*q*r+7120*m^2*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*q*n^2+6080*m^4*p^2*n*alpha+830*m^2*p*q*n^2+6080*m^4*p^2*n^2+6080*m^2*n^2+6080*m^4*p^2*n^2+6080*m^4*p^2*n^2+6080*m^4*p^2*n^2+6080*m^2+6080*m^2*n^2+6080*m^2*n^2+6080*m^2*n^2+6080*m^2*n^2+6080*m^2*n^$ ^2*q*n-18300*m^4*p^2*q-47000*m^2*p*q*r-38890*m^3*p*q*n^2-13100*m^2*p^3

 $*n+12080*m^3*p^2*n^2+23580*m^2*p^2*n^3+31040*m^3*p^3*n+33660*m^5*p*q*n$

 $-13480*m^4*p*q*n+21850*m*p^2*n*r+820*m^4*p*n*r-8200*m^2*n*q*r-3300*m*p$ *n^2*r+200*m^5*p*r+4660*m^3*p*n^3*alpha-480*m^6*p*r-18800*m^2*p^2*n^2* 2*alpha*r+1000*m^3*p*n*r-1870*m^2*p*n^2*r-2700*m^3*p^3*alpha-17250*q*a lpha*m^3*n^3+2500*m*p*r^2+4500*m*p^4-25855*q^2*alpha*m^2*p+22705*q^2*a lpha*m^3*n+20100*m*p^3*n*alpha-4500*q*p^3+700*m^3*p^2*r+41940*m^2*q^2* $n*p-20200*m^4*q*n*r-31500*m^4*p^2*n^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*m^3*p^2*q+7200*m^6*p^2*n-170*m^2+8400*$ 400*m^2*p*q^2+40980*m^3*p*q^2+9200*q^3*p-1650*m*p^2*n^3-26600*m*p^3*n^ 2+24275*m^2*q*n^2*r-18745*m^2*q*n^3*p+9500*q*alpha*n^2*r-10000*q^2*alp ha*r+14300*q*alpha*m^3*p^2-5900*q*alpha*n^3*p+7800*q*alpha*m*n^4-1680* q^2*alpha^2*m^3-16300*q^2*alpha*m*n^2+7800*q*alpha*n^3*m^2+8400*q^3*al $pha*m-8860*n^2*q*p^2*m+8550*p^4*n-6750*p^4*alpha-11250*p^3*r+21780*m^5$ $*q^2*n-27875*m^2*q^2*r-2760*m^9*q*n-24630*m^4*q^2*p+3200*m^6*q*r-20420*m^6*q^2*n-27875*m^2*q^2*n-2760*m^9*q^2*n-24630*m^4*q^2*p+3200*m^6*q^2*n-20420*m^6*q^2*n-24630*m^4*q^2*p+3200*m^6*q^2*n-20420*m^6*q^2*n-24630*m^4*q^2*p+3200*m^6*q^2*n-20420*m^6*q^2*n-24630*m^4*q^2*p+3200*m^6*q^2*n-20420*m^6*q^2*n-24630*m^4*q^2*p+3200*m^6*q^2*n-20420*m^6*q^2*n-24630*m^4*q^2*p+3200*m^6*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*p+3200*m^6*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-24630*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*q^2*n-2460*m^4*n-2460*m^4*q^2*n-2460*m^4*n-2460*m^4*n-2460*m^4*n-2460*m^4*n-2460*m^4*n-2460*m^4*n-2460*m^4*n-2460*m^4*n *m^6*q*n*p+33390*m^4*q*n^2*p+10260*m^5*q*p^2-9010*m^3*q*n*p^2+3240*m^8$ *q*p+25700*m^3*q*r*p+8000*q^2*alpha*n*p-17880*m^6*q*n^2+25290*m^4*q*n^ $3+5040*m^8*q*n+30960*m^2*q^2*n^2+1350*n^2*p^3-34045*m^3*q^2*n^2+16350*m^2*p^3-34045*m^3*q^2*n^2+16350*m^2*p^3-34045*m^3*q^2*n^2+16350*m^2*p^3-34045*m^3*q^2*n^2+16350*m^2*p^3-34045*m^3*q^2*n^2+16350*m^2*p^3-34045*m^3*q^2*n^2+16350*m^2*p^3-34045*m^3*q^2*n^2+16350*m^2*p^3-34045*m^3*q^2*n^2+16350*m^2*p^3-34045*m^3*q^2*n^2+16350*m^2*p^3-34045*m^3*q^2*n^2+16350*m^2*p^3-34045*m^3*q^2*n^2+16350*m^2*p^3-34045*m^3+q^2*n^2+16350*m^2+16050*m^2+16050*m^2+16050*m^2+16050*m^2+16050*m^2+16050*m^2+16050*m^2+16050*m^$ $\label{eq:main_section} $m^3*q*n^4-10000*r*q^2-120*m^6*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^3*alpha*n^2*r-900*r*n^4-250*n^2*r+1460*m^2*r+14$ $00*r^2*q-1000*r^2*m^4+2530*m^2*n^5*p+440*m^5*alpha*n*r+7500*r^2*n^2+23$ 40*m^3*n^5*alpha+2060*m^8*n^2*p+600*n^5*r-200*m^3*alpha^2*p*r-600*n^6* p+37000*m^3*q*n*r+19740*m^5*n^2*p^2-41500*m*q*n^2*r-24900*m^3*n^3*p^2+ 4730*m^4*n^4*p-6360*m^6*n^3*p+4200*n^4*q*p-2700*n^3*q*r-10600*n^2*q^2* p+220*m^2*n^4*p*alpha+24010*m^3*n^2*p^2*alpha-12200*n*q^3*m+3000*n*q^2 *r-620*m^3*n^2*r*p-4800*n^5*q*m+13300*n^3*q^2*m+20860*n^3*q*m*p-24460* $n*q^2*m*p-33300*m^4*q^2*n-15625*r^3-14400*m^2*q*n^4-6460*p^2*q*n^2-1600*m^2*q^2*n-15625*r^3-14400*m^2*q^2*n^4-6460*p^2*q^2*n^2-1600*m^2*n^2-1600*m^2*q^2*n^2-1600*m^2*n^2-1600*m^2*n^2-1600*m^2*n^2-1600*m^2*n^2-1600*m^2*n^2-1600*m^2*n^2-1600*m^2*n^2-1600*m^2*n^2-1600*m^2*n^2-1600*m^2*n^2-1600*m^2-1600*m^2*n^2-1600*m^2-1600$ $m^7*alpha*r+11250*p^3*q*m-16125*p^2*q*r-3820*p^2*m^7*n+3360*n^4*alpha*r+11250*p^3*q*m-16125*p^2*q*r-3820*p^2*m^7*n+3360*n^4*alpha*r+11250*p^3*q*m-16125*p^2*q*r-3820*p^2*m^7*n+3360*n^4*alpha*r+11250*p^3*q*m-16125*p^2*q*r-3820*p^2*m^7*n+3360*n^4*alpha*r+11250*p^3*q*m-16125*p^2*q*r-3820*p^2*m^7*n+3360*n^4*alpha*r+11250*p^3*q*m-16125*p^2*q*r-3820*p^2*m^7*n+3360*n^4*alpha*r+11250*p^3*q*m-16125*$ $m*p-360*m*n^6+1870*p^2*m*n^4-9675*p^3*q*alpha+12255*p^3*q*n+500*m^3*a$ lpha*r^2+3875*n^3*alpha*m^2*r+80*m^6*alpha^2*r+600*n^7*m+6840*m^5*q*n^ $2-7080*m^3*q*n^3+2000*m^2*alpha^2*q*r+4200*m^6*alpha*q*n-2280*m^7*q*$ 900*n*m^5*r*p-8520*m*q^2*n^2+13000*n*m*alpha*q*r+13320*m^3*q^2*n+2280* $\label{eq:m2*n^6+3000*m*q*n^4+29375*m*q*r^2-6000*m^5*q*r-24700*p^3*m^2*n*alpha-m^2*n^6+3000*m^6+3000$ $440*n*m^8*r-200*n*m^10*p+4500*p^3*n^2*alpha+3020*p^3*alpha*m^4+9000*p^4*alpha*m^4+9000*p^4*alpha*m^4+9000*p^4*alpha*m^4+9000*p^4*alpha*m^4+9000*p^4*alpha*m^4+9000*p^4*alpha*m^4+9000*p^4*alpha*m^4+9000*p^4*alpha*m^4+9000*p^4*alpha*m^4+9000*p^4*alpha*m^4+9000*p^4*alpha*m^4+9000*p^4*alpha*m^4*m^4*alpha*m^4*alpha*m^4*alpha*m^4*alpha*m^4*alpha*m^4*alpha*m^4*alpha*m^4*alpha*m^4*alpha$ 4*alpha*m+1020*p^2*r*m^4-8175*p^2*n^2*r+15000*p^3*r*m-11400*p^4*n*m+29 $390*p^3*n^2*m^2-18360*p^3*m^4*n-13420*q*alpha*m*p*n^2+3000*m^6*p*q-624$ $0*m^7*p*q-200*m^8*p*n+400*m^9*p*n-3200*m^4*p*n^3+1660*m^6*p*n^2+9360*m^2+p*n^3+1660*m^6*p*n^2+9360*m^2+p*n^3+1660*m^6*p*n^2+9360*m^2+p*n^3+1660*m^6*p*n^2+p*n^3+p*n^3+1660*m^6*p*n^2+p*n^3+$ ^5*p*n^3-160*m^9*r-390*n^4*alpha^2*m^3+80*m^10*r-1000*m^5*r^2-2880*m^5 *q^2-2090*p^3*n^3+480*m^9*alpha*q+5380*p^4*m^3+1620*p^3*m^6+120*m^7*al pha*n^3+1500*m^4*p^3-26580*m^4*alpha*q*n*p-1560*n^5*alpha*m^2+240*m^11 *q-7130*m^3*n^3*r+1080*m^6*n^4+10500*m^3*n*r^2+8400*m*q^3+720*m^7*n*r+ $a^2*r*m*p+6360*m^6*q^2+12525*m^3*q^3-1600*m^2*p*n*alpha*r-3120*m^5*p^3$ $-17250*q*alpha*m^2*n*r+22960*m^3*p*q*n*alpha+26750*q*alpha*r*m*p-2310*q*n*alpha*r*m*p-2310*$ $m^3*n^6-120*m^8*n^3-3480*m^7*q^2-480*m^10*q-21000*m^22*q^3-20130*m^5*q*10*q^2+1000*m^2+1000$ $n^3+6140*m^3*alpha*n*p*r+240*m^9*q-2970*m^4*n^5-11750*n*q*r*m*p+7820*q$ *alpha*n*p^2*m+19505*q*alpha*n^2*p*m^2-9900*p^4*m^2+120*p^2*m^9+2280*p $^2*n^4+1050*m^3*n^5-7750*n^2*alpha*r*m*p+60*m^7*n^3-480*m^5*n^4)$:

xi1 := $\verb| evalf(6850*m^2*p^3*r*alpha+38040*q*p*m^5*n^3-5745*q*m^3*n^2*alpha^2*p-128040*q*p*m^5*n^3+128040*q*p*m^5*n^3+128040*q*p*m^5+128040*q*m^5+128040$ $14500*n*m^2*p^2*r*alpha+14550*m*p*n^2*r^2-13790*q^2*m^2*n^3*alpha+1754$ 0*q^2*m*n^2*p*alpha+4880*q*p*m^9*n+9000*q*m^2*r^2+2720*q*m^9*r-240*q*m ^11*p-2000*q*m^2*n^4*alpha^2+7160*q*m^8*n^3+5315*q^2*m^2*alpha^2*n^2+1 9815*q^2*m^4*n^2*alpha+13500*m^2*p*r^2*alpha-5625*q*p^4*m-12265*q*m^6* $n^4-2200*m^4*p^3*r-3040*q*m^8*n^2*alpha+320*q*m^10*n*alpha+24550*m^3*p^2+240*m^2+400*m^2+400*m^2+400*m^2+400*m^2+400*m^2+400*m^2+400*m^2+400*m^2+400*m^2+400*m^2+400*m^2+400*m^2+400$ *n^2*r^2+10710*q^3*m^4*n+8835*q^2*m^2*n^4-6250*q*r^2*alpha^2-14580*q*m ^5*p^3+25000*q*m^4*r^2+23720*q^2*m^2*n*p*alpha-43230*q*p^2*m^4*n^2+191 90*m^2*p^3*n*r-1240*q*m^6*n^2*alpha^2-3860*q*m^8*p^2-18600*m^5*p*r^2-5 000*m*p*r^2*alpha^2+2700*q*n^3*p*alpha^2*m+1500*m*p^3*r*alpha+160*q*m^ 8*n*alpha^2-45030*q^2*p^2*m^2*n-40620*q^2*p*m^5*n+300*m^5*p^3*alpha^2- $300*m^3*p^3*r+6035*q^2*p^2*n^2+10050*q*p^2*m^2*n^3-13905*q*p*m^2*n^2*r$ $-7550*q*p*m^4*n*r-3980*q^2*m^6*n*alpha+7040*q*m^3*n^2*alpha*r+60*q*m^3$ *n*alpha^2*r-20000*q*m^5*n*alpha*r+410*q^2*m^6*alpha^2+15340*q^2*m^6*n ^2+17645*m^2*p^4*n*alpha+9400*n*m^2*p^4+4950*m^2*p^5-2070*q*m^4*p^2*al pha^2+9600*n*m^3*p^2*r+8360*q*n*p*alpha*m^7+20750*m*p*n*r^2*alpha-6680 *q*m^6*p^2*alpha+230*q^3*m^4*alpha+17310*q*p^3*m^3*n-21620*q*p*m^3*n^4 $-3800*m*p^3*n^2*alpha^2-23980*q*p*m^7*n^2+2730*q*m^5*n*alpha^2*p+30940$ $*q*p^2*m^6*n-2250*m*p^5-1800*q*m^10*n^2-9000*m^3*p*r^2+570*m^3*p^3*alp$ ha^2*n+80*q^2*m^7*alpha+34800*m^4*p*r^2+4320*q^2*m^7*n-14600*q*m*n*p*r *alpha+28600*q^2*m^2*r*p+24660*q*m^4*n^2*alpha*p+4600*q*m^2*n^5*alpha+ 31455*q^2*m^2*p^2*alpha+14160*q*p*m^2*n*r*alpha-700*q*n^2*p^2*alpha^2-1800*q*m^2*p*alpha^2*r-80*q^2*m^8*alpha-11140*q^3*m^2*n^2-480*q*m^9*p* alpha+20820*q*m^4*p*alpha*r+5170*q^2*m^5*p*alpha-240*q*m^7*p*alpha^2-4 050*q^2*m^3*n*r-11160*q^3*m*alpha*p+10500*q^2*m*alpha^2*r-15050*q^2*m^ 3*alpha*r-14325*m*p^4*n*alpha-19700*q^2*m*alpha*n*r-7500*q*m*n^2*alpha ^2*r-11550*q^2*m^5*r-2000*q*p^2*n^4+3640*q^2*m^7*p-600*m^3*p^4*alpha-5 $050*q^2*n*p^2*alpha+11500*q*m*n^3*alpha*r+15930*q^3*m*n*p-6745*q*n*p^3$ $*alpha*m+28895*q^2*m^4*p^2+6350*q^2*m*n^2*r-14570*q^2*m*n^3*p-7300*q*n+14570*q^2*m*n^3*p-7300*q^2*p-7300*q^2*p-7300*q^2*p-7300*q^2*p-7300*q^2*p-7300*q^2*p-7300*q^2*p-7300*q^2*p-7300*p-7300*q^2*p-7300*p-7300*q^2*p-7300*p-7300*q^2*p-7300*p-7300*p-7300*p$ ^4*p*alpha*m-23780*q^2*m^4*n^3-2320*q^2*m^8*n+19920*q*m^5*n^2*r-49380* $q^2*p^2*m^3-48590*q^2*p*m^3*n*alpha-5600*q^2*n^3*m^2+320*q^3*m^3*alpha$ $-23800*q^2*m^5*n^2-21020*q*m^3*r*p^2+14720*q*m^6*r*p-9750*q*m^2*r^2*n+$ 33250*q*m^2*r^2*alpha-20900*m*p^3*n*r+4250*q*n*p*alpha^2*r-8700*q*n^2* p*alpha*r+8465*q*n*r*m*p^2+7245*q^2*p^3*m-16510*q^3*m^3*p-1000*m^2*p^3 *r-1400*q^2*p^2*n-380*q^2*m*n^4-28400*q*r*alpha*m*p^2-39100*m^2*p*r^2* n+2700*q*n^3*p^2*alpha-5350*q^2*n*r*p+2855*q*m^4*n^3*alpha^2+3105*q*m^ 2*p^2*alpha^2*n-3300*m^3*p^2*alpha^2*r-11200*q^3*m*p-47120*q^2*m^2*n^2 *p+2020*q^3*m*n^2-4350*q^2*m*alpha^2*n*p-10280*q*m^4*n^4*alpha-15760*q $3*n^2*m+2500*q*n^3*r*p+4600*q*p*n^5*m-675*q*m*p^3*alpha^2-22750*q*m*p*n^2+1000*q*n^2+1000*q*n$ $r^2 + 1020 * q * m^5 * alpha^2 * r + 3750 * q * n * r^2 * alpha + 600 * m^4 * p^4 * alpha - 7720 * q * m^4 * p^4 * alpha + 600 * m^4 * alpha + 600 * alpha + 600$ ^6*n*p*alpha+5280*q^2*m^3*p*alpha^2+23260*q^2*m*n*p^2+9345*q*m^4*n^5-2 0220*q*m^3*p^3*alpha+13000*q^2*r*alpha*p+10220*q*m*n^2*p^2*alpha+14110 *q^3*m^2*alpha*n-4410*q^3*m^2*alpha^2-32940*q*m^3*n*alpha*p^2-6720*q^2 $m^6*p-18600*q^3*m^3*n+8760*q*m^4*n*alpha*r-12380*q*m^2*n^3*p*alpha+26$ $0*q^2*m*alpha*n^3-15600*q^2*m*alpha*p^2+40520*q*m*n^2*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m^2*n*p*r+400*q*m*n*p*r+400*q*n*n*p*r+400*q*n*n*p*r+400*q*n*n*p*r+400*q*n*n*p*r+400*$ p*r-585*q*m^3*n^3*r+8920*q^2*m*n^2*p-3860*q^2*m^4*p*alpha-16720*q*p*m^ 3*n*r-27520*q^2*m^3*n*p-8920*q^2*m^3*n^2*alpha+2460*q^2*m^5*n*alpha+21 $820*q^2*m^3*n^3-300*q^2*n^2*p*alpha-8200*q*m^3*p*alpha*r+24000*q^2*m^2$ $*n*r-1040*q^3*m*alpha*n-2800*q^2*m*r*n+66380*q^2*p*m^4*n+4280*q*m^6*n^2$

 $3-30460*q*p*m^5*n^2*alpha+20100*q*p*m^2*n^4-9120*q*p*m^8*n-4220*q*p^3*$ $\verb|m^2*n+3280*q*m^9*n^2+380*q^2*n^3*p-2600*q*m^2*n^6+800*q^4-46000*q^2*m*|$ r*p+4420*q*m^3*n^4*alpha-320*q*m^9*n*alpha+3640*q*m^2*n^2*alpha*r+2660 *q*p^3*n^2-2000*q^2*m^6*n+1620*q*n^5*m^2+39570*q*p^2*m^3*n^2+2720*q*m^ 7*n^2*alpha+15900*q*m^2*p^3*alpha+480*q*m^8*p*alpha-44220*q*m^4*n^3*p+ $15155*q*n^4*m^5-3520*q*m^6*p^2-4130*q*n^4*m^4-2000*q^4*m+1250*q^2*r^2-15155*q^2*m^4+1250*q^2*r^2-15155*q^2*m^4+1250*q^2*r^2-15155*q^2*m^4+1250*q^2*r^2-15155*q^2*m^4+1250*q^2*r^2-15155*q^2*m^4+1250*q^2*r^2-15155*q^2*m^4+1250*q^2*r^2-15155*q^2*m^4+1250*q^2*r^2-15155*q^2*m^4+1250*q^2*r^2-15155*q^2*m^4+1250*q^2*r^2-15155*q^2*r^2-1515*q^2-1515*q^2*r^2-1515*q^2*r^2-1515*q^2*r^2-1515*q^2*r^2-1515*q^2*r^2$ 2500*q^3*m*r+1200*q^3*p*alpha+450*q^2*p^2*alpha^2+2000*q^3*r+1250*q^4* $m^2-6200*q*m*n*p^3-2880*q*m*n^4*p+4240*q*m^7*n*p-2200*q*m^2*n^2*p^2+10$ $45*n^3*p^4-6820*q*m^5*n^3*alpha-1125*p^3*r*alpha^2-6000*p*r^2*n^2+5370*p*n^3*r*alpha^2+6000*p*n^2+125*p^3*r*alpha^2+12$ *p^3*r*n^2+2500*p^2*r^2*m-2025*p^3*r*n*alpha-4800*p*r*q*n^2+12500*p*r 3+8000*p*r*q^2+720*p*r*n^4+20000*p*r^2*q-18375*p^2*r^2*n+5375*p^2*r^2* $m^2+5625*p^2*r^2*alpha+38580*q*p*m^6*n^2-51320*q*p^2*m^5*n-14800*q*m*n$ ^3*p^2+6040*q*m^5*p^2*alpha+9200*q*m^3*n^3*p-15000*q*m^5*n^2*p-5040*q* $m^8*r+480*q*m^10*p+2320*q*m^7*r+160*q*m^10*n-240*q*m^9*p-1480*q*m^8*n^9*p-1480*q*m^9*p-1$ $2+5840*q*m^3*n^2*r+25820*q*p^3*m^4-7960*q*n^5*m^3-2100*q*n*p^3*alpha-3*m^4-7960*q*n^5*m^3-2100*q*n*p^3*alpha-3*m^4-7960*q*n^5*m^3-2100*q*n*p^3*alpha-3*m^4-7960*q*n^5*m^3-2100*q*n*p^3*alpha-3*m^4-7960*q*n^5*m^3-2100*q*n*p^3*alpha-3*m^4-7960*q*n^5*m^3-2100*q*n*p^3*alpha-3*m^4-7960*q*n^5*m^3-2100*q*n*p^3*alpha-3*m^4-7960*q*n^5*m^4-7960*q*n^5*m^3-2100*q*n*p^3*alpha-3*m^4-7960*q*n^5*m^4-7960*q*n^4*m^4-7960*q*n^4-7960$ $20*q*m^11*n-11600*q*p^3*m^3+1125*n*p^4*alpha^2-2250*n^2*p^4*alpha-1682$ $0*q*n^3*m^2*r+2040*q*n^3*m*r-22345*n^2*m^2*p^4-18700*q*p^2*n*r+12000*q$ *p^2*r*alpha+41600*q*p^2*m^2*r-7000*q*p^2*m*r-3040*q*m^6*r*alpha+24080 *alpha-10675*q*p^2*m^2*n^2*alpha+21160*q*m^4*n*p^2+7380*q*p^2*m^7-1128 $0*q*n^3*m^7-195*n^5*m^4*alpha^2+9620*q^2*m^4*n^2+1020*q*p^2*n^3-10320*q*m^5*r*n-7600*q^2*m^3*r-41500*q*m^3*r^2+3080*q^2*m^5*p+60365*q^2*p*m^3+r^2+3080*q^2*m^3*p+60365*q^2*p*m^3+r^2+3080*q^2*m^3*p+60365*q^2*p*m^3+r^2+3080*q^2*m^3*p+60365*q^2*p*m^3+r^2+3080*q^2*m^3*p+60365*q^2*p*m^3+r^2+3080*q^2*m^2+3080*q^2*m^3+r^2+3080*q^2*m^3+r^2+3080*q^2*m^3+r^2+3080*q^2*m^2+3080*q^2*m^3+r^2+3080*q^2*m^3+r^2+3080*q^2*m^3+r^2+3080*q^2*m^2+7080*q^2*m^2+$ 3*n^2+19500*q^2*m^4*r+7440*q^3*m^2*n+27760*q^3*m^2*p-500*q^2*n^2*r-152 2*alpha^2-495*n^5*m^6*alpha-16695*n^4*p^2*m^4+12000*q*m^4*p*r-25520*q* $m^5*p*r-7000*q*m*r^2*n-440*q^3*n^2-1900*n^2*m^8*p^2+30*n^4*m^6*alpha^2$ 4*m^8*alpha+300*n^6*m^2*alpha^2+1170*n^6*m^4*alpha+300*n^4*p^2*alpha^2 n^5*p*alpha^2*m+13160*n^3*p^2*m^6+1980*n^3*p*alpha*m^7-3900*n^2*m^6*p 2*alpha+18715*n^2*p^4*m+70*n^5*p^2*m^2+8205*n^3*p*m^2*r*alpha+14180*n 3*m^5*alpha*r+1875*n^2*r^2*alpha^2-600*n^5*p^2*alpha+1250*m*n*r^3+2145 $*n^5*p*m^5-16740*n^2*m^5*p^3+1200*n^3*p*m^9+780*n^3*m^5*alpha^2*p+1576$ $0*n^3*m^7*r-120*n^2*m^7*p*alpha^2+1500*n^4*m*alpha^2*r-2100*n^5*m*alph$ a*r+6380*n^3*p^3*alpha*m+4090*n^4*p*m^2*r-24850*n^2*m^4*r^2+30300*n^3* p*m^4*r-3535*n^4*m^3*alpha*r+1835*n^3*m^3*alpha^2*r-24960*n^2*m^3*p^3* alpha+345*q*m^2*p^4+9720*n*m^4*p^4+1200*n^6*p*alpha*m-6495*n^2*m^2*p*a lpha^2*r-600*n^7*m^2*alpha-160*n^5*m^3*r-1500*n^3*p*alpha^2*r+4920*n^3 $m*p*r*alpha-9300*n^3*r*m*p^2-600*n^5*r*p+7200*n*m^4*r^2-2845*n^2*r*alpha-9300*n^3*r*m*p^2-600*n^5*r*p+7200*n*m^4*r^2-2845*n^2*r*alpha-9300*n^3*r*m*p^2-600*n^5*r*p+7200*n*m^4*r^2-2845*n^2*r*alpha-9300*n^3*r*m*p^2-600*n^5*r*p+7200*n*m^4*r^2-2845*n^2*r*alpha-9300*n^3*r*m*p^2-600*n^5*r*p+7200*n*m^4*r^2-2845*n^2*r*alpha-9300*n^3*r*m*p^2-600*n^5*r*p+7200*n*m^4*r^2-2845*n^2*r*alpha-9300*n^5*r*p+7200*n*m^4*r^2-2845*n^2*r*alpha-9300*n^5*r*p+7200*n*m^4*r^2-2845*n^2*r*alpha-9300*n^5*r*p+7200*n*m^4*r^2-2845*n^2*r*alpha-9300*n^5*r*p+7200*n*m^4*r^2-2845*n^2*r*alpha-9300*n^5*r*p+7200*n*m^4*r^2-2845*n^2*r*alpha-9300*n^5*r*p+7200*n*m^4*r^2-2845*n^2*r*alpha-9300*n^4*r^2-2845*n^2*r*alpha-9300*n^4*r^2-2845*n^2*r*alpha-9300*n^4*r^2-2845*n^2*r*alpha-9300*n^4*r^2-2845*n^2*r*alpha-9300*n^4*r^2-2845*n^2*r*alpha-9300*n^4*r^2-2845*n^2*r*alpha-9300*n^4*r^2-2845*n^2*r^2-2845*n^2*r^2-2845*n^2*r^2-2845*n^2*r^2-2845*n^2*r^2-2845*n^2*r^2-2845*n^2*r^2-2845*n^2*r^2-2845*n^2*r^2-2845*n^2*r^2-2845*n^2*r^2-2845*n^2*r^2-2845*n^2-285*n^2-285$ pha*m*p^2-11175*n^4*m^5*r+2100*n^4*p*alpha*r-21775*n^2*m^2*r^2*alpha-3 $8820*n^2*m^6*r*p-2180*n^4*p^3*m-780*n^6*m^3*alpha-600*n^7*p*m-3410*n^2$ *m^5*alpha^2*r+2415*n^4*m^4*alpha*p-11280*n^2*m^7*r*alpha-29890*n^2*m^ $3*r*p^2+600*n^6*r*m-1500*n^3*r^2*alpha+2425*n^3*m^2*r^2+9300*q*m^6*n^3*r^2*n^3*m^2*r^2+9300*q*m^6*n^3*r^2*n^3*m^2*r^2+9300*q*m^6*n^3*r^2*n^3*m^2*r^2+9300*q*m^6*n^3*r^2*n^3*m^2*r^2+9300*q*m^6*n^3*r^2*n^3*m^2*r^2+9300*q*m^6*n^3*r^2*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2*r^2+9300*q*m^6*n^3*m^2+9300*q*m^6*n^3*m^2+9300*q*m^6*n^3*m^2+9300*q*m^6*n^3*m^2+9300*q*m^6*n^3*m^2+9300*q*m^6*n^2+9300$ $*alpha + 2460*n^5*m^2*p*alpha - 2580*n^4*m*p^2*alpha - 13370*n^3*m^3*alpha*p^2*alpha - 13370*n^3*m^3*alpha*p^2*alpha - 13370*n^3*m^3*alpha*p^2*alpha - 13370*n^3*m^3*alpha*p^2*alpha - 13370*n^3*m^3*alpha*p$ ^2+720*m^5*n*p^3-13750*m^3*r^3+2250*q*p^4-9840*n^4*m*p*r-3420*n^6*p*m $2-7060*n^3*m^4*alpha*r-480*n^3*m^2*p*r-5290*q^3*p^2-40*q^2*m^10+19180*$ p^2*m^3-2160*n^3*p*m^8+22500*m^2*r^3-1155*n^7*m^4-8625*p^4*m*r-300*n^5 *m^8-6555*p^4*q*n+5175*p^4*q*alpha+8625*p^3*q*r+6555*p^5*m*n-5175*p^5* m*alpha+140*q^3*m^6+60*q^2*n^4-40*q^2*m^8+80*q^2*m^9+40*q^3*m^4-180*q^ $3*m^5-26300*n^3*p*m^3*r+225*m^2*p^4*alpha^2-630*n^4*m^2*p^2-840*n^5*m^3*p*m^4*m^2*p^2-840*n^5*m^2+p^4*alpha^2-630*n^4*m^2*p^2-840*n^5*m^2+p^4*alpha^2-630*n^4*m^2*p^2-840*n^5*m^2+p^4*alpha^2-630*n^4*m^2*p^2-840*n^5*m^2+p^4*alpha^2-630*n^4*m^2+p^2-840*n^5*m^2+p^4*alpha^2-630*n^4*m^2+p^2-840*n^5*m^2+p^4*alpha^2-630*n^4*m^2+p^4*alpha^2-630*n^4*m^2+p^4*alpha^2-630*n^4*m^2+p^4*alpha^2-630*n^4*m^2+p^4*alpha^2-630*n^4*m^2+p^4*alpha^2-630*n^4*m^2+p^4*alpha^2-630*n^4*m^2+p^4*alpha^2-630*n^4*m^2+p^4*alpha^2-630*n^4*m^2+p^4*alpha^2-630*n^4*m^2+p^4*alpha^2-630*n^4*m^2+p^4*alpha^2-630*n^4*n^4*alpha^2-630*n^4*n^4*n^4*n^4*n^4*n^$

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> 3*p-1710*n^4*m^5*p+3420*n^5*m*p^2-21580*n^3*p^2*m^5+5130*n^4*p*m^6+525
             *n^6*m^4+900*n^3*p^3*alpha+240*n^2*m^8*p*alpha+21430*n^2*m^2*p^3*alpha
             +300*n^{6}*p^{2}+300*n^{4}*r^{2}-1485*n^{6}*m^{5}+990*n^{6}*m^{6}-700*m^{6}*p^{3}*alpha+96*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*m^{6}+16*
             0*n^3*m^7*p+1680*n^3*m*p^3+360*n^6*m*p-555*n^5*m^4*p-675*n^2*p^4-27750
             *n^3*p^3*m^2-60*n^4*m^7*alpha+300*n^8*m^2+2100*n^2*p^2*m*r-360*n^5*m*r
             +3980*n^2*m^5*p^2*alpha+3780*n^5*m^2*r-1140*n^4*p^3+30*n^4*m^8+435*n^5
             m^5*alpha-180*n^7*m^2+8440*n^3*m^4*p^2-5240*n^2*m^7*r+13440*n^2*m^8*r
             -180*n^5*p^2+51420*n^2*m^5*p*r+8560*n^2*m^6*r*alpha-20240*n^3*m^6*r+24
             0*n^2*m^10*p-13480*n^2*p^3*m^3+30240*n^2*p^3*m^4-60*n^4*m^9+3280*m^9*n
             *alpha*r-2080*n^2*m^6*p^2+8245*n^4*m^4*r+810*m^6*p^4-240*n^5*m^6+32590
             *n^2*p^2*m^2*r-3600*n^2*p^2*r*alpha-6200*m^5*p^2*r-160*m^13*r-18750*m*
             r^3*alpha-780*n^4*m^3*r+31600*n^2*m^3*r^2-14160*n^2*m^4*p*r+5840*n^3*m
            ^5*r+3000*n^3*m*r^2+540*n^5*m^7+1140*n^7*m^3+4020*n^2*p^2*m^7+40*m^12*
            p^2-660*n^5*p*m^3*alpha+40*m^10*p^2-4640*n^4*p^2*m^2*alpha-1300*m^5*p^
             4-1800*m^6*r^2+16930*n^3*p^2*m^4*alpha+440*m^9*p^3-3000*m^8*r^2+400*m^
            7*p^3-840*m^8*p^3+5600*m^7*r^2-80*m^11*p^2-120*n^2*m^9*p-100*m^6*p^2*a
             lpha^2*n-160*m^11*r+40*m^8*p^2*alpha^2+320*m^12*r+6060*n^3*p^2*r-100*m
            ^{^{7}*p^{^{3}*n+550*m^{^{4}*p^{^{4}-240*m^{^{1}}0*p^{^{2}*n+80*m^{^{1}}0*p^{^{2}*alpha+1340*m^{^{5}*n*p^{^{3}*alpha+1340*m^{^{5}*n*p^{^{3}*alpha+1340*m^{^{5}*n*p^{^{3}*alpha+1340*m^{^{5}*n*p^{^{3}*alpha+1340*m^{^{5}*n*p^{^{3}*alpha+1340*m^{^{5}*n*p^{^{3}*alpha+1340*m^{^{5}*n*p^{^{3}*alpha+1340*m^{^{5}*n*p^{^{3}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*alpha+1340*m^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}*n*p^{5}
            ha*r-1600*m^6*p*alpha^2*r-3760*m^8*p*alpha*r+1360*m^7*n*alpha^2*r+740*
            m^7*p^3*alpha+21880*m^6*p*n*r*alpha+16400*m^8*p*n*r+260*m^7*n*alpha*p^
            2+6325*m*p^2*n*alpha^2*r+25100*m^4*n*r^2*alpha+18000*m^6*r^2*n-5200*m^
             6*r^2*alpha-7340*m^7*r*p^2+3600*m^5*r^2*alpha-9400*m^5*r*alpha*p^2-185
            20*m^5*n*p*r*alpha+25800*m^5*n*r*p^2-1750*m^4*r^2*alpha^2+1920*m^11*n*
            r-320*m^11*r*alpha-160*m^9*alpha^2*r-2160*m^10*r*p+3600*m^7*p*alpha*r-
            27600*m^7*p*n*r-2960*m^8*n*alpha*r+11360*m^6*n*p*r-660*m^6*p^3*n-2000*
            m^8*p*r+13100*m^6*p^2*r+4160*m^9*p*r+3375*p^5*alpha+5625*p^4*r-4275*p^6
            5*n+320*m^10*r*alpha-3520*m^10*n*r+9400*m^4*p^2*r*alpha-160*m^8*n*p^2-
             p^2*n*alpha-1740*m^4*n*p^3*alpha-30000*m^5*r^2*n-19320*n*m^3*p^4-1560*
             n^4*m^2*alpha*r-11700*n*m^3*r^2*alpha+11160*n*m^3*r*alpha*p^2-2300*m^3
            *p^5):
           xi := evalf((-xi2+sqrt(xi2^2-4*xi3*xi1))/(2*xi3)):
           eta :=
            evalf(-(4*xi*m^4-15*xi*p-21*m^2*p*alpha+10*xi*n^2+21*m^3*n*alpha-4*xi*p+10*xi*m^2+21*m^3*n*alpha-4*xi*p+10*xi*n^2+21*m^3*n*alpha-4*xi*p+10*xi*n^2+21*m^3*n*alpha-4*xi*p+10*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n^2+21*m^3*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alpha-4*xi*n*alp
           m^3-56*m^3*n^2-58*m*n*q-20*xi*q-23*m*p^2+4*m^6+23*p*q-4*m^7-10*xi*n*a1
            pha+13*xi*m*n-17*xi*m^2*n+4*xi*m^2*alpha+17*xi*m*p+25*n*p*alpha+29*m*n
              ^3+31*m^3*q+21*m*q*alpha-23*m*n^2*alpha+15*p^2+28*m^5*n-29*p*n^2-25*r*
          alpha+81*p*m^2*n-6*n^3+35*n*r-28*m^4*p-4*m^5*alpha-52*m*n*p-35*m^2*r-2
             4*n*m^4+22*n*q-26*m^2*q+30*m*r+35*m^2*n^2+26*m^3*p)/(25*m*q-20*q+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^2+20*m^
             3*n+19*n*p-22*m^2*p-19*m*n^2-16*m^2*n+13*n*m*alpha+6*n^2-15*p*alpha-25
            *r-4*m^3*alpha+20*m*p-4*m^5+4*m^4):
             #m equal to zero, n not
             #w :=
             evalf(sqrt(400*q^2+600*p*q-100*q*n^2+225*p^2+80*p*n^2-500*n*r-200*q*n+100*q*n^2+80*p*n^2-100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100*q*n+100
        60*n^3+60*n*p^2):
```

#Omega := `2+25500000*n^5*r^4*p+11520*n^9*p^3*r+291600*p^9*r*n+712800*p^5*q^3*n` p^2*n^6*r^3-140625000*p^2*r^5*n+62500000*n^2*r^5*q+25000000*q^2*n^3*r^ 4-299700*p^6*n^3*q^2+25000000*n^2*r^4*q^2+25312500*n^3*r^4*p^2-6144000 *q^7*n*p+619520*q^5*n^4*p^2-51840*n^10*q*p*r+777600*p^8*n^2*r-1166400* $n^{9}*q*r^{2}+34560*n^{9}*p^{2}*r^{2}-32400000*p^{5}*q^{3}*r-3240000*p^{6}*n^{3}*r*q+409000*p^{6}*n^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}*p^{2}*r^{2}+34560*n^{2}+3460*n^{2}+3$ $6000 \div n^3 \times q^6 \times p - 84375000 \times n \times r^4 \times q \times p^2 + 26312500 \times p^2 \times n^4 \times r^4 + 1795500 \times p^6 \times n^4 \times r^4 \times r^4 + 1795500 \times p^6 \times r^4 \times r^4$ ^3*r^2-58880*n^7*q^4*p+1350000*n^7*r^4-1600000*q^4*n^4*r^2-7680000*q^6 *n*p*r+63281250*p^4*r^4+6681600*n^3*q^5*p^2-64125000*p^4*n^3*r^3+40000 $000*n^3*q^3*r^3-59375000*p*n^3*r^5-2252800*n^4*q^6+39062500*n^2*r^6+77$ $760*n^11*r^2-432000*n^8*p*r^3-546750*p^8*q^2+101250000*n^2*r^3*p^3*q+1$ $03680*n^10*r^2*p-11250000*n^5*r^4*q+1473600*p^3*n^7*r^2+207360*n^6*p^5$ *r+15360*n^9*q^3*p+8869500*n^5*r^2*p^4+77760*p^7*n^4*r+5184000*q^5*p^4 $2*q^4-650240*n^5*q^5*p-8775000*p^5*n^2*r^3-8524800*q^5*n^2*p^3-19440*p^3+19440*p^4+1940*p$ ^6*n^4*q^2+8437500*p^4*r^4*n+88080*p^4*q^3*n^5+1468800*n^8*r^2*p^2-409 6000*n^4*q^5*r-57600000*p^3*q^5*r-1280*p^4*n^7*q^2+252480*n^7*q^3*p^2- $2192000*n^5*q^4*p^2-86400000*p^4*q^4*r+(1980000*p^2*n^3*r^2*q^2-460800)$ *q^6*p^2-25920*n^2*p^7*r-18000000*n^4*r^2*q^2*p+168960*q^5*n^2*p^2-1944 $00*p^7*r*q+10125000*r^3*p^3*q*n+1395000*p^3*r^2*n^3*q-345600*q^5*p^3-5$ 760*n^7*q^3*p-442800*n^5*r^2*p^3-6375000*p^2*n^2*r^4+36450*p^7*q^2-384 $0*n^5*r*p^5+1350000*n^4*r^3*p^2-60480*n^3*p^6*r-4218750*p^3*r^4+216000*p^4*r^4+216000*p^4*r^4+216000*p^4*r^4+216000*p^4*r^4+216000*p^4*r^4+216000*p^4*r^4+216000*p^4*r^4+216000*p^4*r^4+216000*p^4*r^4+216000*p^4*r^4+216000*p^4*r^4+216000*p^4*r^4+216000*p^4*r^4+216000*p^4*r^4+$ $45760*n^3*q^5*p+15120*p^5*q^2*n^3+307200*q^6*n*p+2880000*p^3*q^4*r+162$ $000*p*n^6*r^3+65280*n^5*q^4*p+1440*p^3*n^6*q^2+960*p^4*q^2*n^5-38880*n$ ^8*r^2*p-2970000*p^4*n^2*r^2*q-78240*p^3*n^4*q^3-3037500*p^5*r^2*q+345 25000*n^3*r^4*p+162000*p^6*r^2*n-5625000*r^4*p^2*q-3840*n^6*p^2*q^3-27 360*n^3*p^4*q^3-25920*p^2*n^7*r^2+48600*p^6*q^3+2137500*p^3*n^3*r^3-14 5800*p^8*r+4687500*p*r^5*n+5062500*p^4*r^3*n-5760*n^6*p^4*r-226800*p^5 $*q^3*n-174000*p^4*n^4*r^2-86400*p^2*n^5*r^2*q+25920*n^7*r*p^2*q+453600$ *n^6*r^2*p*q+343200*p^4*n^4*q*r+2400000*q^3*r^2*n^2*p-10800*p^3*q^2*n^ 4*r-1920000*q^4*r*p^2*n-288000*n^5*r*p^2*q^2+980100*p^6*q*r*n+384000*q ^5*n*p*r+3000000*p*n^2*r^3*q^2+3750000*n*r^4*q*p-408000*q^3*n^2*p^3*r+ $17280*n^6*r*p^3*q^4500000*p^2*r^3*n^2*q^1350000*r^3*p*q*n^4+1248000*q^2*r^3*p^4+1248000*q^2*r^3*p^4+1248000*q^2*p^4+1248000*q^2*p^4+1248000*q^2*p^4+1248000*q^2*p^4+1248000*q^2*p^4+1248000*q^2*p^4+1248000*q^2*p^4+1248000*q^2*p^4+12480000*q^2*p^4+1248000*q^2*p^4+124800000*q^2*p^4+124800000*q^2*p^4+124800000*q^2*p^4+124800000*q^2*p^4+124800000*q^2*p^4+1248000000*q^2*p^4+12480000$ 3*r*p^2*n^3-1512000*p^4*q^2*n^2*r-6000000*q^3*n*p^2*r^2-192000*n^3*p*q ^4*r+122400*p^5*n^3*r*q+1093500*p^5*q^2*n*r)*w-4860000*p^7*n*r^2+15360 $*n^8*r*p^4+9216000*q^7*p^2+577500*p^4*n^4*r^2*q+768000*q^3*n^5*p^2*r+1$ 0*p^5*n^3*r*q^2-23040*p^3*n^8*r*q-391200*p^5*n^5*r*q-82800000*r^2*p^3* q^2*n^3-26190000*p^5*q^3*n*r-2418000*p^4*n^4*r*q^2-202500000*r^3*p^3*q `2*n-11200000*q^4*n^3*p^2*r+26880000*q^5*n*p^2*r+126000000*q^3*n*p^3*r ^2+26000000*p*n^4*r^3*q^2-12800000*r*p*q^5*n^2+748800*n^8*q^2*p*r-2025 0000*p^4*n*q^2*r^2-540000*p*n^6*r^3*q+32000*q^4*n^5*p*r+26820000*q^3*n ^2*p^4*r+45000000*p^2*n^2*r^3*q^2-93750000*r^5*p*q*n-18750000*n^4*r^5+ $160000*n^4*p*r*q^4+8424000*q^4*n*p^5+3888000*p^7*r*q^2-1458000*p^7*q^3$ $-648000*n^9*r^3-9072000*n^6*r^2*p*q^2+273600*n^7*p^2*q^2*r+121500000*p^2+273600*n^2*p^2*q^2*r+121500000*p^2+273600*p^2*q^2*r+121500000*p^2+273600*p^2*q^2*p^2*p^2*q^2*p^2*p^2*q^2*p^2*p^2*q^2*p^2*q^2*p^2*q^2*p^2*q^2*p^2*q^2*p^2*q^$ ^5*q^2*r^2+1198800*n^3*p^7*r+2816000*q^5*n^3*p*r+13824000*q^6*p^3+8100

```
> 0000*p^4*q^3*r^2-54720*p^5*n^5*q^2+16706250*p^6*r^2*n^2-72900*p^8*q^2*
              n+2250000*n^6*r^4+5832000*p^8*r*q-30375000*n^4*r^3*p^3+5120000*q^6*n^2
              *r-2880*n^9*p^2*q^2+191250000*p^3*n^2*r^4+168750000*r^4*p^3*q+4572000*
               p^5*n^4*r^2-16800000*n^5*q^3*r^2+2048000*q^7*n^2-4531200*q^6*n^2*p^2+9
                26720*n^6*q^5+5120*n^8*p^2*q^3+200000*q^3*n^6*r^2-1113600*p^3*n^7*q*r+
               9632000*p^3*n^5*q^2*r+29214000*n^2*r*p^5*q^2+50400000*n^4*r^2*p*q^3-22
               275000*p<sup>2</sup>4*n<sup>3</sup>*q*r<sup>2</sup>-12546000*n<sup>6</sup>*r<sup>2</sup>*p<sup>2</sup>*q+218880*n<sup>5</sup>*r*p<sup>6</sup>+491600*p<sup>2</sup>
               4*n^6*r^2+237440*n^6*p^3*q^3-446400*q^4*n^3*p^4+614400*q^4*n^4*p^3-270
              0000*n^7*p*r^3+18000000*n^5*p*r^3*q-75000000*q^2*r^4*p*n-6912000*q^6*n
               *p^2+5120 \\ *p^5*n^7*r+28500000 \\ *p^2*n^4*r^3*q-80000000*q^3*n^2*p*r^3-3037
              50000*r^3*p^4*q*n-35397000*p^6*q^2*r*n+15360000*q^4*n^2*p^3*r+2835000*
              r^2*p^6*q*n-3392000*q^3*n^4*p^3*r+4128000*p^2*n^5*r^2*q^2-33120000*p^3
              *n^3*q^3*r-1668600*p^7*n^2*r*q+91260000*p^5*n^2*r^2*q-64000*n^7*p*q^3*
              r-30000000*n^3*p*r^3*q^2-15000000*n^4*r^4*q+16000000*n^3*q^4*r^2+43200
              000*p^3*n*q^4*r^7511400*p^5*n^4*q*r^36000000*n^2*r^2*p^2*q^3-69120*p^2
               *n^9*q*r+112500000*r^4*p^2*q^2-194400*p^7*n^2*q^2-96000*n^8*q^3*r+7560*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2*q^2+194400*p^2+19400*p^2+19400*p^2+19400*p^2+19400*p^2+19400*p^2+19400*p^2+1940
               000*n^7*q*r^3+6624000*n^7*q^2*r^2+3200000*q^5*n^2*r^2-972000*p^6*q^4-5
                1840*p^{4}*n^{6}*q^{2}+380700*p^{6}*q^{3}*n^{2}-30000000*n^{5}*q^{2}*r^{3}+5875200*q^{5}*n
               *p^4+2187000*p^9*r-4300000*p^3*n^5*r^3+1088000*n^6*q^4*r):
               #alpha := evalf(1/10*(-20*q-15*p+10*n^2+w)/n):
               #eta :=
               evalf((-44*q*n^2+2*w*n*(1/20*(400*q^2*r-260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-375*p*r^2+36*n^4*r+260*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n^2*q*r-360*n
              -27*p^3*q+195*n*p^2*r+48*n*q^2*p-4*n^3*q*p)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2-88*p^2)*w/((12*n^4*q-4*n^3*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p^2-88*p
              n^2*q^2-40*n^2*p*r+125*n*r^2+117*q*n*p^2+160*q^3-27*p^4-300*r*p*q)*n)+
              1/20*(-1640*n^3*p*q^2-960*p^2*n^3*r+540*p^3*q^2+240*p*n^5*q-2925*p^3*r
             *n-11550*p^2*n*r*q+3900*n^2*r*p*q+405*p^4*q-540*p^5*n-6250*n*r^3-8000*
              q^3*r-80*p^3*n^4+5625*p^2*r^2+2720*q^3*n*p-6000*q^2*r*p+7500*r^2*p*q-7
               20*p^2*n*q^2+sqrt(0mega)+4400*q^2*n^2*r-600*n^4*r*q+2340*p^3*n^2*q+675
               0*p*n^2*r^2-540*n^4*r*p+60*p^2*n^3*q)/((12*n^4*q-4*n^3*p^2-88*n^2*q^2-12*n^2)
               40*n^2*p*r+125*n*r^2+117*q*n*p^2+160*q^3-27*p^4-300*r*p*q)*n))+45*n*p^2+160*q^3-27*p^4-300*r*p*q)*n))+45*n*p^2+160*q^3-27*p^4-300*r*p*q)*n))+45*n*p^2+160*q^3-27*p^4-300*r*p*q)*n))+45*n*p^2+160*q^3-27*p^4-300*r*p*q)*n))+45*n*p^2+160*q^3-27*p^4-300*r*p*q)*n))+45*n*p^2+160*q^3-27*p^4-300*r*p*q)*n))+45*n*p^2+160*q^3-27*p^4-300*r*p*q)*n))+45*n*p^2+160*q^3-27*p^4-300*r*p*q)*n))+45*n*p^2+160*q^3-27*p^4-300*r*p*q)*n))+45*n*p^2+160*q^3-27*p^4-300*r*p*q)*n))+45*n*p^4-300*r*p*q)*n))+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p^4-300*r*p*q)*n)+45*n*p*q)*n)+45*n*p*q)*n)+45*n*p*q)*n)+45*n*p*q^4-300*r*p*q)*n)+45*n*p*q)*n)+45*n*q^4-300*r*p*q)*n)+45*n*p*q)*n)+45*n*q*q)*n)+45*n*q*q)*n^4-300*r*q*n*q)*n^4-300*r*q*q)*n^4-300*r*q*q)*n^4-300*r*q*q)*n^4-300*r*q*q)*n^4-300*r*q*q)*n^4-300*r*q*q)*n^4-300*r*q*q)*n^4-300*r*q*q^2-300*r*q*q^2-300*r*q*q)*n^4-300*r*q*q^2-300*r*q*q^2-300*r*q*q^2-300*r*q*q^2-300*r*q*q^2-300*r*q*q^2-300*r*q*q^2-300*r*q*q^2-300*r*q*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-300*r*q^2-
               2-5*p*n*w+12*n^4+8*p*n^3+54*p*q*n-100*r*q-75*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3*p*r+5*r*w-20*n^2*r)/(-3
               *w-40*q*n-50*n*r+8*p*n^2+12*n^3+60*p*q+45*p^2):
               #xi :=
               evalf(1/20*(400*q^2*r-260*n^2*q*r-375*p*r^2+36*n^4*r-27*p^3*q+195*n*p^2)
               2*r+48*n*q^2*p-4*n^3*q*p)*w/((12*n^4*q-4*n^3*p^2-88*n^2*q^2-40*n^2*p*r
               +125*n*r^2+117*q*n*p^2+160*q^3-27*p^4-300*r*p*q)*n)+1/20*(-1640*n^3*p*
               q^2-960*p^2*n^3*r+540*p^3*q^2+240*p*n^5*q-2925*p^3*r*n-11550*p^2*n*r*q
               +3900*n^2*r*p*q+405*p^4*q-540*p^5*n-6250*n*r^3-8000*q^3*r-80*p^3*n^4+5
               625*p^2*r^2+2720*q^3*n*p-6000*q^2*r*p+7500*r^2*p*q-720*p^2*n*q^2+sqrt(
               0mega) + 4400*q^2*n^2*r - 600*n^4*r*q + 2340*p^3*n^2*q + 6750*p*n^2*r^2 - 540*n^2*r^2 - 540*n^2 - 54
                4*r*p+60*p^2*n^3*q)/((12*n^4*q-4*n^3*p^2-88*n^2*q^2-40*n^2*p*r+125*n*r
                 ^2+117*q*n*p^2+160*q^3-27*p^4-300*r*p*q)*n)):
               #Both m and n equal to zero
> #alpha := -1/5*(10*q-3*p^2+25*r)/(4*q+3*p):
```

```
> #xi :=
           `2-14100*q^2*p^2*r-12500*q*r^3+3750*q*p*r^2-10800*q*r*p^3-1161*p^5*q-8
           10*p^6-1125*r^2*p^3+sqrt(1843200*q^7*p^3-172800*q^6*p^4+103680*q^5*p^6-194400*q^4*p^7-648000*p^5*q^5-72900*p^8*q^3+28125000*q*r^5*p^3+140625
           00*q^2*p^2*r^4+8437500*q*p^4*r^4-891000*q^3*p^7*r+777600*q^2*p^8*r+256
           50000*q^2*p^5*r^3+93750000*q^2*r^5*p+156250000*q^2*r^6-10935*p^10*q^2+
           112500000*q^3*p^2*r^4+75000000*q^3*r^4*p+22500000*q^2*r^4*p^3+9315000*
           q^2*p^6*r^2+250000000*q^3*r^5-121500*q^4*p^6+67500000*q^3*r^3*p^3+1012
           5000 \cdot q^3 * p^4 * r^2 + 100000000 * q^4 * r^4 - 7200000 * q^5 * r * p^3 + 2592000 * q^3 * r * p^6
           -1674000*p^5*q^4*r+24840000*p^5*q^3*r^2+486000*p^7*r*q^2+43740*p^11*r+
           6144000*q^8*p+1152000*q^7*p^2+8192000*q^9+1265625*r^4*p^6+12800000*q^7
           *r^2+20480000*q^8*r+1883250*p^8*q*r^2+291600*q*r*p^9+1800000000*p^2*q^4
          *r^3-38400000*p^2*q^6*r-15750000*q^4*p^4*r^2-13680000*q^5*p^4*r+240000
           2-43520000*q^7*p*r+54000000*p^3*q^4*r^2))/((160*q^3-300*q*p*r-27*p^4)*
           (4*q+3*p))):
           #eta
            :=(50*q*r-15*p^2*r+125*r^2+129*p^2*q+45*p^3+92*p*q^2-80*q^2*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-120*q*xi-1
            i*p-45*p^2*xi)/(100*q*r+80*q^2+30*p*q+9*p^3):
           #Calculate d3, d2, d1, d0, a, b, c, A and B in all cases
           evalf(9/5*m^5*q-9/5*m^4*r+24/5*m^3*r-p*alpha^3-2/25*n^3-56/25*n*p^2+36
           25*p^3+6/5*n^2*alpha^2-36/25*p*m^6-96/25*p*m^4-4/25*m^9-12/25*m^7*alpha^2-36/25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+25*p^2+
           a+27/5*q*n^2*m+24/25*m^6*alpha+12/25*m^4*alpha^2+p^2+54/25*m*p^2*n-38/
           5*q*n*m-5*r*alpha^2-4*q*alpha^2+2*r*m+162/25*m^3*p*alpha-87/25*m^4*p*a
           lpha+11/5*q*p*alpha+14/5*m*alpha^2*p-23/5*n^2*p*alpha-3*m^2*p*alpha-4/
           25*m^3*alpha^3-12/25*m^5*alpha^2+12/5*p^2*alpha-3*r*n^2-5*r*alpha-6/5*
          m^2*q^3*m*q^2-314/25*n*m*alpha*p+261/25*n*m^2*alpha*p-8*n*m*alpha*q-12
           /5*n^3*alpha+3*r*n-12/25*m^5*alpha-5*r*m^2+2*p*r+2/5*n*q+10*r*m*alpha+
            66/25*n*m^3*alpha^2+3/5*n*m*alpha^3+19/5*n*p*alpha^2-3*m*n^2*alpha^2+4
           4/5*q*n*alpha+17/5*q*m*alpha^2-42/5*q*m^2*alpha+33/25*n^2*m^2+21/5*m^3
            *q*alpha-58/25*m*p^2*alpha+13/5*n*p*alpha-28/5*n^2*q+6/5*n^4+4*q^2-24/
           5*q*m^4+237/25*n^2*m^4-186/25*n^3*m^2+252/25*n^2*m*p+279/25*m^2*p*n-38
           /5*m*n*r-23/5*m*p^2-69/25*p*n^2-12/5*m*p*n+27/5*r*m^2*n+27/5*m^2*q*p+2
           1/5*m^3*q-12/5*m*p*r-12/5*q*p*n+23/5*q*p+69/25*m*n^3+3*q*r-162/25*m^3*p*n^3*q*p+69/25*m*n^3+3*q*r-162/25*m^3*p*n^3+3*q*p+69/25*m*n^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+3*q*p+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^3+69/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/25*m^4/
          n^2-108/25*m^5*n^2+123/25*m^3*n^3+102/25*m^5*p-78/5*m^3*p*n+153/25*m^2
          *p^2-96/25*m^6*n-12/25*m^7+4/25*m^6+21/5*m*alpha*n^3+234/25*m^2*alpha*
          n^2+63/25*n*m^3*alpha-36/5*n*m^3*q-63/25*m*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^3*alpha*n^2-183/25*m^2-183/25*m^3*alpha*n^2-183/25*m^2-183/25*m^2-183/25*m^2-183/25*m^2-183/25*m^2-183/25*m^2-183
          n^2-189/25*m^2*n^2*p+7*r*n*alpha-29/5*r*m^2*alpha+21/5*q*m*alpha+171/2
> 5*n*m^4*p-6*n*m^4*alpha+87/25*n*m^5*alpha-54/25*n*m^2*alpha^2-76/25*m^
           2*alpha^2*p+12/25*m^8-24/25*m^4*n+6/5*m^3*p+9/5*p*n^3):
```

d2 := $evalf(-18/5*q*m^2*eta+246/25*m^5*q+12/25*eta*m^8-138/25*m^6*q-54/5*m^4$ *r+28/5*m^3*r+694/25*m*n^2*p*alpha-308/25*m*q*p*alpha+162/25*m^3*eta*p *alpha+234/25*eta*m^2*alpha*n^2-10*eta*q*m*p+72/5*eta*q*m^2*n+24/5*m^7 $*p-24/25*m^7*eta-28/5*n*p^2-24/5*n*m^8+276/25*m^4*p^2+216/25*n*m^7+6/5$ $*q*n*eta+292/25*q*m^2*n-468/25*p^2*m^3-48/5*q*m*p-198/25*m*n^4-12/5*p^2$ $3-6/5*n^3*alpha^2-228/25*p*m^6+12/25*m^10+6*m^5*r-6/5*n^5+3*p^2*alpha^2+12/25*m^10+6*m^20+12/25*m^20+12/25*m^2$ $2-24/25*m^9-96/25*eta*m^6*n+153/25*eta*m^2*p^2-78/5*eta*m^3*p*n+102/25*e*n+102/25*e*n+102/25*e*n+102/25*e*n+102/25*e*n+102/25*e*n+102/25*e*n+102/25*e*n+102/25*e*n+$ *eta*m^5*p+252/25*eta*n^2*m*p-186/25*eta*n^3*m^2-24/5*eta*q*m^4+237/25 *eta*n^2*m^4-28/5*eta*n^2*q-24/25*m^7*alpha+686/25*q*n^2*m+5*r^2+656/2 5*m*p^2*n+3*eta*p^2+12/5*p^2*xi+88/25*m^3*alpha^2*p-24/25*m^5*eta*alph $a-186/25*m^4*p*alpha+46/5*q*p*alpha-48/5*n^2*q*alpha-12/5*n^3*eta*al$ $a-38/5*n^2*p*alpha-10*r*alpha*eta+24/25*m^4*alpha*xi+24/25*m^8*alpha+1$ $2/25*m^6*alpha^2-12/25*m^7*xi+24/25*m^6*xi-42/5*r*n^2-5*r*xi-10*m*q^2+$ 14/5*p*m*alpha^2*eta-152/25*m^2*alpha*p*xi+34/5*q*m*alpha*xi+44/5*q*n* eta*alpha-42/5*q*m^2*eta*alpha-38/5*r*m*n*eta+10*r*m*alpha*eta+22/5*n* $q*alpha^2+42/5*q*m*alpha*eta+572/25*n*m^2*alpha*p-76/5*q*m*n*eta-314/2$ 5*n*m*xi*p+126/25*n*m^3*alpha*eta-108/25*n*m^2*alpha*xi+261/25*n*m^2*x i*p-452/25*n*m*alpha*q-126/25*m*alpha*n^2*eta-116/5*r*m*alpha*n+558/25 $*n*m^2*eta*p+12/5*n^4*alpha-76/5*r*m*q-12/5*n^3*xi+8*p*r+8/5*q^2*alpha$ +51/5*m^2*q^2-26/5*q^2*n+28/5*m*alpha*p*xi+26/5*n*eta*p*alpha-6*m^2*et $a*p*alpha-816/25*n*m^3*alpha*p+638/25*n*m^2*alpha*q-8*n*m*xi*q-54/25*n*m*n*q-8*n*m*xi*q-54/25*n*m*n*q-8*n*m*q-8*n*q-8*n*m*q-8*n*q-8*n*q-8*n*q-8*n*q-8*n*m*q-8*n*q-8$ *eta*m^2*alpha^2-6*n*eta*m^4*alpha+9/5*n*m*alpha^2*xi+132/25*n*m^3*alp ha*xi-42/5*n*m*p*alpha^2+38/5*n*p*alpha*xi-6*m*n^2*alpha*xi-314/25*n*e ta*m*alpha*p+6*r*n*eta-10*r*m^2*eta+10*r*m*xi-78/25*n*m^4*alpha^2+12/5 *n^2*alpha*xi+6/5*n^2*eta*alpha^2+129/25*m^2*n^2*alpha^2-10*p^2*n*alph a+12/5*p^2*alpha*eta-528/25*m^3*q*p+268/25*m^2*p^2*alpha-42/5*q*m^2*xi +44/5*q*n*xi+24/5*r*m^3*eta+6/5*eta*n^4-3*m^2*xi*p+4*eta*q^2-63/25*m*x $i*n^2-\bar{87}/25*m^4*p*xi+162/25*m^3*p*xi+11/5*q*p*xi+216/25*m^3*q*alpha-8*p*xi+216/25*m^3*q*alpha-8*p*xi+216/25*m^3*q*alpha-8*p*xi+216/25*m^3*p*xi+216/25*m^3*q*alpha-8*p*xi+216/25*m^3*p*xi+216/25*m^3*q*alpha-8*p*xi+216/25*m^3*p*xi+216/25*m^3*q*alpha-8*p*xi+216/25*m^3*p*xi+216/25*m^3*q*alpha-8*p*xi+216/25*m^3*q*xi+216/25*m^3*q*xi+216/25*m^3*q*alpha-8*p*xi+216/25*m^3*q*xi+216/25*m^3*q*xi+216/25*m^3*q*xi+21$ $m*p^2*alpha-198/25*n*m^6*alpha+516/25*m^4*alpha*n^2-444/25*m^2*alpha*n$ ^3+21/5*m^3*q*xi-58/25*m*p^2*xi+13/5*n*p*xi-23/5*n^2*p*xi+24/25*m^6*et a*alpha+198/25*m^5*p*alpha+12/25*m^4*alpha^2*eta-3*p*alpha^2*xi-12/25* m^5*xi+63/25*m^3*xi*n-6/25*n^3*eta+171/25*p^2*n^2+99/25*n^2*m^2*eta-32 $/25*n^2*q+6/25*n^4+4/5*q^2-108/25*q*m^4+234/25*n^2*m^4-168/25*n^3*m^2+$ 312/25*n^2*m*p-56/5*m*n*r+52/25*m*p^3+84/5*m^2*p*r+96/5*m*r*n^2+152/5* $r*m^2*n-58/5*p*n*r+748/25*m^2*q*p+18/5*m^3*eta*p-72/25*m^4*eta*n+654/2$ 5*q*n*m*p-104/5*m*p*r-476/25*q*p*n+12/25*m^6*eta+10*q*r+6*q*n^3-36/5*n $*eta*m*p-642/25*m^5*n^2+696/25*m^3*n^3+108/25*m^5*p-432/25*m^3*p*n+38/25*m^3*p^3+108/25*m^5*p-432/25*m^3*p^3+108/25*m^5*p-432/25*m^3*p^3+108/25*m^5*p-432/25*m^3*p^3+108/25*m^5*p-432/25*m^3*p^3+108/25*m^5*p-432/25*m^3*p^3+108/25*m^5*p-432/25*m^3*p^3+108/25*m^5*p-432/25*m^3*p^3+108/25*m^5*p-432/25*m^3*p^3+108/25*m^5*p-432/25*m^3+108/25*m^3+108/25*m^5*p-432/25*m^3+108/25*m^2+108/25*m^3+108/25*m^2+108/25*m$ $5*m^2*p^2-96/25*m^6*n-52/25*q*p^2+321/25*n^4*m^2-24*m^3*r*n-88/25*m^2*p^2+321/25*n^4*m^2-24*m^3*r*n-88/25*m^2*p^2+321/25*n^4*m^2-24*m^3*r*n-88/25*m^2*p^2+321/25*n^4*m^2-24*m^3*r*n-88/25*m^2*p^2+321/25*n^4*m^2-24*m^3*r*n-88/25*m^2*p^2+321/25*n^4*m^2-24*m^3*r*n-88/25*m^2*p^2+321/25*n^4*m^2-24*m^3*r*n-88/25*m^2+321/25*n^4*m^2-24*m^3*r*n-88/25*m^2+321/25*n^4*m^2-24*m^3*r*n-88/25*m^2+321/25*n^4*m^2+321/25*n^$ alpha^2*q-216/25*m^4*q*alpha+186/25*m*alpha*n^3+228/5*m^3*p*n^2-138/25 *n^2*eta*p-792/25*q*m^2*n^2-183/25*m^3*xi*n^2+21/5*m*xi*n^3-324/25*m^3 *n^2*eta-492/25*n^3*m*p+87/25*n*m^5*xi+678/25*n*q*m^4-192/5*n*m^3*q+23 4/25*m^2*xi*n^2-72/5*m^3*alpha*n^2-1296/25*m^2*n^2*p+138/25*m*n^3*eta+ 56/5*r*m^3*alpha+6*r*m*eta+10*r*n*alpha+10*r*p*alpha+4*r*m*alpha^2-48/ 5*r*m^2*alpha+7*r*n*xi-29/5*r*m^2*xi+1122/25*n*m^4*p+168/25*n*m^5*eta-6*n*m^4*xi+174/25*n*m^5*alpha+42/5*q*m^3*eta+46/5*q*p*eta-576/25*n*m^2 *p^2-702/25*n*m^5*p-192/25*p*m^4*eta-24/25*m^5*alpha*xi-46/5*m*p^2*eta $-12/25*m^3*alpha^2*xi+2*p*r*eta-8*q*alpha*xi-4*q*eta*alpha^2-10*r*alpha*xi-4*q*eta*alpha^2-10*r*alpha*xi-4*q*eta*alpha*alpha*xi-4*q*eta*alpha*alpha*xi-4*q*eta*alpha*a$ $a*xi-56/25*p^2*n*eta+84/5*m^6*n^2+12/25*m^8-606/25*n^3*m^4+21/5*m*xi*q$ +198/25*p*n^3):

d1 := $evalf(-18/5*q*m^2*eta^2+6/5*q*n*eta^2-12/25*m^7*eta^2+31/5*p^3*n-36/5*p^3*n$ 18/5*m^3*eta^2*p-72/25*m^4*eta^2*n-3*p^3*alpha+87/5*n*p^2*m*alpha+367/ 25*m*n^2*q*alpha+152/5*r*n*m^2*eta+579/25*m-4*p*n*alpha-176/25*m-2*alp ha*q*xi-72/5*eta*m^3*alpha*n^2-1296/25*eta*m^2*n^2*p-63/25*m*alpha*n^2 *eta^2+202/5*r*p*m*n+279/25*n*m^2*eta^2*p-126/25*eta*m*xi*n^2-6*eta*m^ 2*xi*p-282/25*q^2*m^3+141/25*m^7*q-24/25*m^9*eta-96/5*eta*q*m*p+584/25 *eta*q*m^2*n+126/25*m^7*p-132/25*p*m^8-24/5*n*m^8-186/25*p^3*m^2+327/2 $5*m^4*p^2-15*p^2*m^5-129/25*p*n^4-12/25*m^11+12/25*m^10+12/25*m^6*eta^1$ $2-33/5*m^6*r+6*m^5*r-11*m*r^2-6/25*n^5+42/5*eta*m*xi*q-192/25*eta*m^6*$ n+76/5*eta*m^2*p^2-864/25*eta*m^3*p*n+216/25*eta*m^5*p+624/25*eta*n^2* $m*p-336/25*eta*n^3*m^2-216/25*eta*q*m^4+468/25*eta*n^2*m^4-64/25*eta*n$ `2*q+129/25*m*n^5+126/25*eta*m^3*xi*n+6/5*n^2*xi^2+5*r^2-4*q*xi^2-12/5 *p^3*eta-5*r*xi^2+3*p^2*eta^2-69/5*n^2*m^5*alpha-37/25*m*q^2*alpha-123 /25*m*n^4*alpha-822/25*m^5*n*q-12/25*m^9*alpha-452/25*n*eta*m*alpha*q- $24/25*eta*m^5*xi-24/25*m^7*xi+927/25*m^5*n^3-528/25*m^7*n^2+44/5*n*q*a$ lpha*xi+13/5*p*n*eta^2*alpha-3*p*m^2*eta^2*alpha+46/5*p*q*alpha*eta+24 /25*m^4*alpha*eta*xi-104/5*r*m*p*eta-112/5*r*m*n*eta-762/25*n^2*m^2*p* alpha-186/25*m^4*eta*p*alpha+10*r*m*xi*eta+10*r*n*eta*alpha+8*r*m*alph a*xi-192/5*n*eta*m^3*q+656/25*n*eta*m*p^2+21/5*q*m*alpha*eta^2-38/5*q* m*n*eta^2+572/25*n*m^2*xi*p+63/25*n*m^3*alpha*eta^2+186/25*eta*m*alpha *n^3+686/25*eta*m*n^2*q+79/5*r*m^2*n*alpha-116/5*r*m*xi*n+132/25*m^9*n $-669/25*m^3*n^4-52/5*r*m*q+12/25*m^4*xi^2+14/5*m*p*xi^2-54/25*m^2*n*xi$ ^2+147/25*m^2*q^2-34/25*q^2*n+28/5*p*m*alpha*xi*eta-8*q*eta*alpha*xi-8 *p^2*m*alpha*eta-10*p*n*q*alpha-38/5*p*n^2*eta*alpha+259/25*q*m^2*p*al pha-444/25*q*m^3*n*alpha+216/25*q*m^3*eta*alpha+748/25*p*q*m^2*eta+26/ 5*n*eta*p*xi+176/25*m^3*xi*p*alpha+174/25*n*eta*m^5*alpha-452/25*n*m*x i*q+1122/25*n*eta*m^4*p-1404/25*p*q*m^2*n-42/5*p*r*m*alpha+9/5*n*m*alp ha*xi^2-156/25*n*m^4*alpha*xi+12/5*n^2*eta*alpha*xi+258/25*m^2*n^2*alpha*xi ha*xi-48/5*r*m^2*eta*alpha-476/25*n*eta*q*p-108/25*n*eta*m^2*alpha*xi- $84/5*n*m*p*alpha*xi-42/5*n^2*r*eta+6*p^2*alpha*xi+10*r*q*eta-5*r*m^2*e$ ta^2+3*r*n*eta^2-132/5*p*r*m^3+19/5*n*p*xi^2-12/5*n^3*alpha*xi-10*p^2* $n*xi+12/5*p^2*xi*eta-3*p*alpha*xi^2-198/5*m^2*r*n^2-54/5*m^4*r*eta-246$ /25*m^5*eta*q-504/25*m^3*q*p+217/25*q*p^2*m+24/25*m^6*alpha*xi+111/25* $\label{lem:mapping} $m^7*n*alpha-222/25*m^3*p^2*alpha-111/25*m^6*p*alpha-24/25*m^7*eta*alpha-111/25*m^6*p*alpha-24/25*m^7*eta*alpha-111/25*m^6*p*alpha-24/25*m^7*eta*alpha-111/25*m^6*p*alpha-24/25*m^7*eta*alpha-111/25*m^6*p*alpha-111/25*m^6*p*alpha-111/25*m^7*eta*alpha-111/25*m^6*p*alpha-111/25*m^7*eta*alpha-111/25*m^6*p*alpha-111/25*m^7*eta*alpha-111/25*m^6*p*alpha-111/25*m^7*eta*alpha-111/25*m^6*p*alpha-111/25*m^7*eta*alpha-111/25*m^6*p*alpha-111/25*m^7*eta*alpha-111/25*m^6*p*alph$ a+56/5*r*m^3*eta+12/25*eta*n^4+8/5*eta*q^2-186/25*m^4*p*xi+46/5*q*p*xi +216/25*m^3*q*xi-8*m*p^2*xi-38/5*n^2*p*xi-5*r*alpha*eta^2+5*p*n^3*alph $a-10*r*xi*eta-6/25*n^3*eta^2+47/5*p^2*n^2+26/5*m*p^3+94/5*m^2*p*r+94/5$ $*m*r*n^2-84/5*p*n*r+748/25*q*n*m*p+34/25*q*n^3-26/5*q*p^2-3*m*xi^2*n^2$ $-31/25*p*q^2+267/25*n^4*m^2-76/25*m^2*xi^2*p+27/5*r*n^3+66/25*m^3*xi^2$ $*n-24*m^3*r*n+1314/25*n^2*q*m^3-27/5*m^4*r*alpha+33*m^4*r*n-516/25*n^3$ $*q*m-846/25*n^2*p^2*m+1218/25*n*p^2*m^3+252/5*m^3*p*n^2-198/25*eta*m*n$ ^4+69/25*m*n^3*eta^2-69/25*n^2*eta^2*p-132/5*q*m^2*n^2-72/5*m^3*xi*n^2 $-162/25*m^3*n^2*eta^2+186/25*m*xi*n^3-504/25*n^3*m*p+301/25*n*q^2*m+17$ 4/25*n*m^5*xi+606/25*n*q*m^4+84/25*n*m^5*eta^2+696/25*eta*m^3*n^3-642/ 25*eta*m^5*n^2+198/25*eta*n^3*p+381/25*q*p*n^2-54/5*q*n*r+109/5*q*m^2* r+6*r*m*eta^2+56/5*r*m^3*xi+10*r*n*xi+10*r*p*xi+r*q*alpha-48/5*r*m^2*x i+21/5*q*m^3*eta^2+23/5*q*p*eta^2-5*r*n^2*alpha-804/25*n*m^2*p^2-756/2 $5*n*m^5*p+216/25*n*eta*m^7+183/5*p*m^6*n-468/25*p^2*m^3*eta-96/25*p*m^6$ 4*eta^2-228/25*p*m^6*eta+657/25*p*q*m^4-1959/25*p*n^2*m^4+1362/25*p*n^ 3*m^2+402/25*n^3*m^3*alpha+111/25*q*m^5*alpha-12/25*m^5*eta^2*alpha-23 /5*m*p^2*eta^2-10*m*q^2*eta-12/25*m^3*alpha*xi^2+16*p*r*eta-56/5*p^2*n *eta+572/25*n*eta*m^2*alpha*p+12/5*n^4*xi+8/5*q^2*xi-12/25*m^5*xi^2+41

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7/25*m^6*n^2-582/25*n^3*m^4-12/5*n^3*eta*xi-308/25*q*m*p*xi+638/25*q*m
   ^2*n*xi+44/5*q*n*eta*xi-42/5*q*m^2*eta*xi+24/25*m^8*xi+17/5*m*xi^2*q-1
   98/25*m^6*n*xi+268/25*m^2*p^2*xi-816/25*m^3*p*n*xi+198/25*m^5*p*xi-314
    /25*n*eta*m*p*xi+24/25*m^6*eta*xi-6*m^4*eta*n*xi+162/25*m^3*eta*p*xi+6
   94/25*n^2*m*p*xi-444/25*n^3*m^2*xi+516/25*n^2*m^4*xi-216/25*q*m^4*xi-4
   8/5*n^2*q*xi+234/25*n^2*m^2*eta*xi):
   d0 :=
   evalf(14/25*q^2*n^2-528/25*n^2*q*m*p-12/25*n^4*q+408/25*n^3*q*m^2-72/5
   *m^5*r*n-24*m^3*r*n*eta+6*m^5*r*eta-27/5*m^4*r*xi+24*m^3*r*n^2+p^4-708
    /25*n*p^2*m^4+87/5*n*p^2*m*xi+47/5*n^2*p^2*eta-132/5*n^2*q*m^4+12/5*m^
    7*r-5*r*n^2*xi-48/5*m^3*r*q-24/5*n^3*p^2-37/25*m*q^2*xi-123/25*m*n^4*x
   i+579/25*m^4*p*n*xi-186/25*m^4*eta*p*xi+259/25*q*m^2*p*xi-444/25*q*m^3
   *n*xi+216/25*q*m^3*eta*xi+44/5*r*p*n^2-132/5*eta*q*m^2*n^2+186/25*eta*
   m*xi*n^3-63/25*m*xi*n^2*eta^2+234/25*m^4*eta^2*n^2+33/25*m^2*eta^3*n^2
   -168/25*n^3*m^2*eta^2+312/25*n^2*eta^2*m*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*n*p-32/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*eta^2-432/25*q*n^2*
   m^3*eta^2*p-54/25*n*eta*m^2*xi^2-24/5*n*eta*m^8+6*m^2*r^2+63/25*n*m^3*
   xi*eta^2+292/25*n*q*m^2*eta^2+6/25*n^4*eta^2-6/25*eta*n^5-582/25*eta*n
   ^3*m^4+34/25*eta*n^3*q-72/5*eta*m^3*xi*n^2+267/25*eta*n^4*m^2+252/5*et
   a*m^3*p*n^2-504/25*eta*n^3*m*p+56/5*q*m*n*r+417/25*eta*m^6*n^2-2/25*n^2
   3*eta^3-4*n*r^2+4/25*q^3-48/5*n*p^3*m+804/25*n^2*p^2*m^2+2*r*m*eta^3+3
   67/25*m*n^2*q*xi+r*q*xi+10*r*n*eta*xi-48/5*r*m^2*eta*xi+79/5*r*m^2*n*x
   i+327/25*m^4*p^2*eta-168/25*m^2*p^2*q-8/5*q*p*r-756/25*n*eta*m^5*p+606
    /25*n*eta*q*m^4+174/25*n*eta*m^5*xi-108/25*q*m^4*eta^2-452/25*n*eta*m*
   xi*q-96/25*n*m^6*eta^2+21/5*q*m*xi*eta^2-804/25*n*eta*m^2*p^2-24/25*n*
   m^4*eta^3+136/25*m^3*p^3+2/5*q*n*eta^3-6/5*q*m^2*eta^3-48/5*q*m*p*eta^
   2+162/25*m^6*p^2+4/5*q^2*eta^2+748/25*n*eta*q*m*p+572/25*n*eta*m^2*xi*
   p-24/25*m^7*eta*xi-12/25*m^5*eta^2*xi+28/5*q*n*p^2-84/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*n*eta-144/5*p*r*
   5*p*r*m^2*n-42/5*p*r*m*xi+12*p*r*m^4+28/25*q^2*m*p-42/5*n*m*p*xi^2-78/
   25*n*m^4*xi^2+3/5*n*m*xi^3+6/5*n^2*eta*xi^2+129/25*m^2*n^2*xi^2-6/5*n^
   3*xi^2+5*r^2*eta+4*r*m*xi^2+4/25*m^6*eta^3+12/25*m^8*eta^2+147/25*m^2*
   q^2*eta-34/25*q^2*n*eta+22/5*n*q*xi^2-4*q*eta*xi^2+94/5*p*r*m^2*eta-38
   /5*p*n^2*eta*xi-10*p*n*q*xi+108/25*m^5*eta^2*p+126/25*m^7*eta*p-126/25
   m^6*eta*q+12/25*m^10*eta-504/25*m^3*eta*q*p-3*p*m^2*eta^2*xi+13/5*p*n
   *eta^2*xi+46/5*p*q*xi*eta+14/5*p*m*xi^2*eta+102/25*m^4*q^2-48/25*m^8*q
   +4/25*m^12+111/25*m^7*n*xi-p*xi^3-52/5*r*m*q*eta-56/5*r*m*n*eta^2+94/5
   *r*m*n^2*eta+28/5*r*m^3*eta^2-48/5*m*n^3*r+2/25*n^6+3*p^2*xi^2-3*p^3*x
   i+6/5*m^3*p*eta^3-12/5*m*p*n*eta^3+28/5*m*p^2*r+8*p*r*eta^2+816/25*m^3
    *p*q*n+48/25*m^9*p+26/5*p^3*m*eta-26/5*p^2*q*eta+38/5*m^2*p^2*eta^2-38
   4/25*m^7*p*n-264/25*m^5*p*q+204/5*m^5*p*n^2-1008/25*m^3*p*n^3+252/25*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+204/5*m^2+2
   *p*n^4-28/5*p^2*n*eta^2-8*p^2*m*xi*eta-762/25*n^2*m^2*p*xi+402/25*n^3*
   m^3*xi+216/25*m^8*n^2-48/25*m^10*n-448/25*m^6*n^3+417/25*m^4*n^4-168/2
   5*m^2*n*q^2+324/25*m^6*n*q-132/25*m^2*n^5-69/5*n^2*m^5*xi+111/25*q*m^5
   *xi+12/25*m^4*xi^2*eta+88/25*m^3*xi^2*p-88/25*m^2*xi^2*q-222/25*m^3*p^
   2*xi-111/25*m^6*p*xi-4/25*m^3*xi^3+12/25*m^6*xi^2-12/25*m^9*xi-5*r*xi*
   eta^2+5*p*n^3*xi+p^2*eta^3):
   ^2*d2^2-18*d1*d2*d3*d0+27*d0^2*d3^2+4*d0*d2^3)*d3)^(1/3)/d3-2/3*(3*d1*
   d3-d2^2)/(d3*(36*d1*d2*d3-108*d0*d3^2-8*d2^3+12*sqrt(3)*sqrt(4*d1^3*d3)
   -d1^2*d2^2-18*d1*d2*d3*d0+27*d0^2*d3^2+4*d0*d2^3)*d3)^(1/3))-1/3*d2/d3
 b := evalf(alpha*d+xi):
c := evalf(d+eta):
```

 $evalf(1/5*d*m^3+1/5*b*m-3/5*d*m*n-2/5*n^2+4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*c*m^2+2/5*c*n-4/5*q-1/5*q-1/5*$ $m*p+4/5*m^2*n+3/5*d*p-1/5*m^4$: $evalf(m^2*r*b^3+6*c^2*r*b*d*p-10*c^2*r*b*a+r*d^3*q^2-2*r*b^3*n+15*a^2*r*b^3+n+15*a^2*r^b+n+1$ b*r-10*q^2*a*d*m*n-q^2*c*n*d*p-4*d^2*q^3*c-9*c*r*p*b^2+18*q^2*a^2-8*a*q^3-16*q*a^3-6*c*r*b^2*d*n-4*c^2*r*b^2*m+3*c*r*b*d^2*n^2+6*c*r*b*p^2-5 *c^3*r^2-6*c^2*r*d*p^2+3*c^3*r*b*n-5*m*q^2*b^2*d-8*m*r*a*c^2*n+4*q^2*a $*n^2-8*m*q*b^2*r-2*m^2*q*a*b^2+d^4*q^3+3*r^2*d^2*n^2-2*d^3*n*q^2*b-5*d^2*n^2-2*d^3*n*q^2*b-5*d^2*n^2-2*d^3*n*q^2*b-5*d^2*n^2-2*d^3*n*q^2*b-5*d^2*n^2-2*d^3*n*q^2*b-5*d^2*n^2-2*d^3*n*q^2*b-5*d^2*n^2-2*d^3*n*q^2*b-5*d^2*n^2-2*d^3*n*q^2*b-5*d^2*n^2-2*d^3*n^2$ ^3*r^2*b+4*m*r*a*c*n^2-d*r*b^3*m+r*d*m^2*n*b^2-5*r*d*p*b^2*m-r*b*d*p*n ^2-2*r*b*a*m^2*n-2*c^3*q^2*n-4*r*d*q*a*c+r*b*d^2*p*m*n+2*r*b*a*n^2+2*r $*a*b^2*m+2*r*m^2*p*b^2-r*n^2*b^2*m+r*p*b^2*n+2*r^2*m*p*c+r*b*n*p^2+3*b$ ^2*r*d^2*p+4*d*r*a*c*m*p-d^3*r*b*n*p-d^2*r*b^2*m*n+b^4*q-2*b^2*q*d^2*m *p-3*m*q³*b+d*m²*q*b³+2*d*r*c³*m*p-8*a*n*r²-2*b²*q*c*n²+3*b²*q *c*d*p+b^2*q*c^2*n-2*a*d^3*p^3-2*c^2*r*p*b*m+2*c*r*d^3*p^2+10*a*c*r^2-12*q*a^2*n^2-7*p*b*r^2-2*c*q^3*n+13*d^2*r^2*b*m+c^2*q*b*d*m*p+4*c^2*r* $m*p^2+4*c^3*r*a*m-2*c^2*r*p*d^2*n+4*q*n*r^2-b*q*c^3*p+b*q*d^3*p^2-c^2*r*p*d^2*n+4*q*n*r^2-b*q*c^3*p+b*q*d^3*p^2-c^2*r*p*d^2*n+4*q*n*r^2-b*q*c^3*p+b*q*d^3*p^2-c^2*r*p*d^2*n+4*q*n*r^2-b*q*c^3*p+b*q*d^3*p^2-c^2*r*p*d^2*n+4*q*n*r^2-b*q*c^3*p+b*q*d^3*p^2-c^2*r*p*d^2*n+4*q*n*r^2-b*q*c^3*p+b*q*d^3*p^2-c^2*r*p*d^2*n+4*q*n*r^2-b*q*c^3*p+b*q*d^3*p^2-c^2*r*p*d^2*n+4*q*n*r^2-b*q*c^3*p+b*q*d^3*p^2-c^2*r*p*d^2*n+4*q*n*r^2-b*q*c^3*p+b*q*d^3*p^2-c^2*r*p*d^2*p+b*q*d^3*p^2-c^2*p+b*q*d^2*$ $q*p*b*m^2-4*m^2*r^2*c^2+5*d^3*r*b*m*q-8*c^2*q^2*a+4*d*r*b^2*c*m^2-4*d^2*r*b^2*c*m^2-4*d^2*r^2*c^2*q^2*a+4*d*r*b^2*c*m^2-4*d^2*r^2*c^2*q^2*a+4*d*r*b^2*c*m^2-4*d^2*r^2*c^2*q^2*a+4*d*r*b^2*c*m^2-4*d^2*c^2*q^2*a+4*d*r*b^2*c*m^2-4*d^2*c^2*q^2*a+4*d*r*b^2*c*m^2-4*d^2*c^2*q^2*a+4*d*r*b^2*c*m^2-4*d^2*c^2*q^2*a+4*d*r*b^2*c*m^2-4*d^2*c^2*q^2*a+4*d*r*b^2*c*m^2-4*d^2*c^2*q^2*a+4*d*r*b^2*c*m^2-4*d^2*c^2*q^2*a+4*d*r*b^2*c*m^2-4*d^2*c^2*q^2*a+4*d*r*b^2*c*m^2-4*d^2*c*m^2-4*d^2*c*m^2-4*d^2*c*m^2-4*d^2*c*m^2-4*d^2*c*m^2+6*d^2*c*m^2-4*d^2*c*m^2-$ 2*r*b*m*c*p-m^3*q*b^3+m^2*q^2*c^3+3*m^2*q^2*b^2+4*c*q^2*b^2-2*m^2*r*c^3*p-4*d^3*r^2*c*m-3*d*r*b*c^2*m*n-9*d^2*r^2*c*n-2*d^2*r*m*c*p^2+3*m^2* r*b*c^2*n+8*r^2*c^2*n+10*d^2*r^2*a-6*a*p^3*b+4*d*r*p*b*c*m^2-4*m^3*r*b ^2*c-3*n*q^2*b^2+q^2*c^2*n^2+6*a*p^2*b^2+3*d^4*r^2*n-2*c^4*r*p+b^2*q*n ^3-c*q^2*d^3*p+6*m^2*q*c*a^2+c^4*q^2+d*r*c^3*q+12*a*m^2*r^2+r^2*d^2*q+ q^2*c*p^2+7*q^2*b*r+12*a^2*c*n*m*p+3*a^2*c*n*d*p-15*a^2*c*m*d*q-3*a^2* 12*a^2*n*p^2-12*a^2*p*r+3*a^2*d^2*n^3+9*a^2*d^2*p^2+6*a^2*d*p*c*m^2+24 *a^2*m*n*r-3*a^2*d*m*n^3-9*a^2*d^2*n*q-12*a^2*m*p*n^2-6*a^2*m^3*p*c+9* a^2*n^2*b*m+3*a^2*d*p*n^2-15*a^2*d*p^2*m+9*a^2*d^2*m^2*q-6*a^2*c^2*m*p $-3*a^2*c*n^2*d*m+4*a^3*m^4+8*a^3*n^2+3*a^2*n^4-6*q^2*a*c*m^2+4*q^2*c*n^2+3*a^2*n^4+6*q^2*a*c*m^2+4*q^2*c*n^2+3*a^2*n^4+6*q^2*a*c*m^2+4*q^2*c*n^2+3*a^2*n^4+6*q^2*a*c*m^2+3*a^2*n^4+6*q^2*a*a*c*m^2+3*a^2*n^4+6*q^2*a*a*c*m^2+3*a^2*n^4+6*q^2*a*a*c*m^2+3*a^2*n^4+6*q^2*a*a*c*m^2+3*a^2*n^2+3*a^2$ $*a+12*a^3*d*m*n+3*m^2*p*a^2*b+21*a^2*d*m^2*r+3*a^2*c*n^2*m^2-6*a^2*b*d$ $*n^2-15*a^2*p*b*n+9*a^2*b*c*p+12*a^2*b*d*q-18*a^2*c*m*r-21*a^2*d*n*r+5$ $*a^4-2*q^2*d*p*a+8*q^2*a*m*p+4*a*c*m*d*q^2+6*a*d^2*m^2*q^2+q^2*d*n*r+3$ $*q^2*p*b*n-5*q^2*b*c*p+3*c*m*d*q^3-16*a*b*d*q^2+4*a*d^2*n*q^2+d^2*n*q^2*n*q^2+d^2*n*q^$ 3+3*a^2*c^2*n^2+4*a^3*c*m^2-4*a^3*b*m-8*c*n*a^3-12*d*p*a^3-4*a^3*d*m^3 +16*a^3*m*p-16*a^3*m^2*n+3*a^2*b^2*n-6*a^2*c*n^3-12*a^2*m^3*r-9*a^2*c* p^2-4*q^2*p*r+q^4+4*b*d*q^3-d*p*q^3-3*d*p*a^2*b*m+4*c*q^2*b*d*n-3*d*q^ 2*b*c*m^2-d*q^2*c^2*m*n+c^2*q^2*b*m+d^2*p*b*q^2+15*d*r*c*a^2-9*d^2*r*m *a^2+2*c^2*q^3-d^3*q^3*m+q^2*c*n*b*m+d^2*p*c*m*q^2-m*p*b*d*q^2+12*a*m* p*b*r-3*r*c*d*q^2-r*d^2*m*q^2+3*c^2*p*d*q^2+2*a*c^3*p^2-2*a*m^2*p*c*n* b+2*a*m*p*b*d*n^2-2*a*m*p^2*c*n*d+16*a*c^2*p*r+2*a*c*p^2*n^2+2*a*m^2*p ^2*c^2-16*q*a*c*n*d*p+2*q*m*p*b*r+10*a*m*q^2*b+4*m^3*r*a*c^2+6*q*a*d*p $*n^2+2*q*a*d*p^2*m+2*q*a*n^2*b*m-16*q*a*c*n*b*m-2*q*a*d*m^2*n*b-6*q*a*c*n*b*m-2*q*a*d*m^2*n*b-6*q*a*c*n*b*m-2*q*a*d*m^2*n*b-6*q*a*c*n*b*m-2*q*a*d*m^2*n*b-6*q*a*c*n*b*m-2*q*a*d*m^2*n*b-6*q*a*c*n*b*m-2*q*a*d*m^2*n*b-6*q*a*c*n*b*m-2*q*a*d*m^2*n*b-6*q*a*c*n*b*m-2*q*a*d*m^2*n*b-6*q*a*c*n*b*m-2*q*a*d*m^2*n*b-6*q*a*c*n*b*m-2*q*a*c*n*b*m-2*q*a*c*n*b*m-2*q*a*c*n*b*m-2*q*a*c*n*b*m-2*q*a*d*m^2*n*b-6*q*a*c*n*b*m-2*n*b*m-2*n*$ $\verb|d^2*p*m*n+8*q*a*c*n*m*p+4*q*a*p*b*n+4*q*a*b*c*p+8*q*a*c*m*r+12*q*a*d*n|$ *n^3+4*q*a*c*p^2-8*q*a*n*p^2+16*q*a*p*r-2*q*a*d^2*p^2+6*q*c*n*a^2+15*q *d*p*a^2-9*q*a^2*d*m^3-24*q*a^2*m*p+12*q*a^2*m^2*n+4*q*a*b^2*n-3*q*a^2 *b*m-10*q*m^2*p*a*b+6*q*a^2*d*m*n-4*q*c^2*p*r+8*q*a*c^2*n^2+6*c^2*q*a^ 2+6*a^2*m^2*p^2-3*q*m*p*b^2*n-16*q*d^2*r*m*a-q*b*p*c*n^2+2*q*b*p*c^2*n -q*d^2*r*n*c*m-22*q*a*b*r+6*a*d*p^3*c-2*a*d*p^3*n+2*a*d*p^2*r+11*q*d^2 *r*c*p-2*q*d*r*c^2*n+d^3*r*c*q*n+q*d*r*c*n^2+3*q*d^3*r*m*p-5*q*d^2*r*b *n-5*q*d^2*r*b*m^2-q*c*p*b^2*m+4*q*c*p*n*r+13*q*d*r*b^2-q*d^2*m*p^2*b+ $3*q*p^2*b^2-6*q*c*r^2-3*q*b^3*p+2*q*d*m^2*p*b^2+10*q*r*b*d*m*n-2*a*b^3$ *p-q*d*m*r^2+3*q*d*p^2*r+20*q*d*p*a*b*m+q*d*p*c*n*b*m+2*q*m*p^2*b*c-8*

q*d*p*c*m*r-3*q*d^2*p*n*r+q*d*p*b^2*n+5*d*r^3-4*m*r^3+2*a*p^4+4*a*d*p* b^2*n-6*a*d^2*p*m^2*r+2*a*d^2*p*n*r+6*a*m*p^2*b*n+2*a*d*p*c*n*b*m-8*a* m*p^2*r+2*a*m*p^3*d^2-3*q*d*p^2*b*c+2*a*m*p^2*b*c+q*d*p^2*b*n-2*a*d*p^ 2*b*n-2*a*d^2*p*b*n^2-10*a*d^2*p*b*q-6*a*d*p^2*b*c+8*a*c*q*b*d*n-4*a*c *q*d^2*n^2+6*a*c^2*q*b*m-6*a*m*p*b^2*n+2*a*d^2*p^2*c*n-2*a*d*p^2*c^2*m +6*a*d^3*p*n*q+4*a*b*p*c*n^2-2*a*b*p*c^2*n-2*a*b*p*n^3+4*a*m^2*p*c*r-8 *a*c*q*b^2+14*a*d^2*r*b*n-8*a*d^2*r*b*m^2-14*a*d^2*r*c*p-6*a*d*r*c^2*n +14*a*d*r*b*c*m+12*a*d*r*c*n^2+6*a*d^3*r*m*p+10*a*d^2*r*n*c*m-4*a*c^3* *n*r-6*a*d*q*b*c*m^2+4*a*d*q*c^2*m*n+2*a*m^3*p*b^2-4*a*m^2*p^2*b*d-6*a *d*r*n^3-6*a*d^3*r*n^2-10*a*d*r*b^2+6*a*r*d^2*n^2*m-10*a*r*d*n*c*m^2-2 $0*a*r*b*d*m*n+8*a*r*b*d*m^3-2*a*d*m^2*p*b^2+4*a*d^2*m*p^2*b-4*a*m*p^3*$ $c+8*a*r*p*n^2-6*a*d^3*q^2*m+8*a*d^2*q^2*c-22*a*d*m*r^2-4*a*c^2*p^2*n-2$ *a*d^2*p*c*m*q+b*d*n*r^2-5*p*d*n*r^2-2*r*p*c^2*n^2+5*b*m*n*r^2-8*b*d*m ^2*r^2-2*b*c*m*r^2+4*c*p*d*r^2+2*r*c^2*p*d*n*m-5*r*b*q*n^2+4*r*c^3*p*n -4*d*r*a*c^2*m^2+2*r*b*c*n*q+2*r*b*d*p*a-3*r*b*c*n^2*d*m+3*r*b*c*n^3-6 $*r*b*c^2*n^2+2*r*m*q^2*c-8*r*p*c*n*b*m+5*b^2*r^2-5*d*r^2*c*b-10*r*p*b*$ d*q+2*r*c*n*d*p^2+4*d^2*r^2*c*m^2-3*d^3*r^2*m*n+3*d*r^2*c^2*m+5*r*b*c* $n*d*p-6*r*b*a*c*m^2+8*r*b*c*n*a+r*d*q*c^2*m^2-2*c*r*p^3+3*r*c^2*q*b+11$ *r*c*n*b^2*m+4*r*p*a*d*m*n+2*r^2*d*n*c*m+2*r^2*d^2*m*p-3*r^2*c*n^2+2*p $^2*r^2-2*d^3*r^2*p+2*d^2*q^2*m*b*n+3*m*q*b^3*n+2*m^2*q*b*c*r-2*d*q^2*b*p+2*d^2*d^2*p+2*d^2*d^2*p+2*d^2*p+2*d^2*p+2*d^2*p+2*d^2*p+2*d^2*p+2*d^2*p+2*d^2*d^2*p+2*d^2*d^2*d^2*d$ *n^2+5*c*r*b^3-m*q*b^2*d*n^2+m^2*q*c*n*b^2+2*d^2*q^2*b^2+3*d^2*q^2*b*c $*m+2*d^2*q*b*a*m*n-d^2*q*b*c*n*p+6*d^3*q*r*a-d*q^2*c^3*m-4*d*q^2*c^2*b$ $+2*d*q*a*b^2*m-7*d^2*q*r*c*b-d*q*c*n*b^2*m+d^2*q*b^2*n^2-3*d^4*q*r*p-2$ *d*q*b^3*n-d^2*q*r*c^2*m+d^2*q^2*c^2*n-2*c^2*q^2*p*m+5*d^2*r^2*c^2-c*q $*b^3*m-q*p^3*b$:

B :=

evalf(3*m*r^2*b^3-3*r*p^2*b^3+2*m*r^3*c^2+a*d^4*q^3+d^4*r^3*m-b^3*r*n^ 3+5*a*b^2*r^2-5*c^2*r*b*a^2+r^3*d^2*p-3*r*b*a^2*c*m^2+4*r*b*c*n*a^2+2* r*p*a^2*d*m*n+d^2*q*b*a^2*m*n+d*q*a^2*b^2*m-a^2*d^2*p*c*m*q-2*d*r*a^2* $c^2*m^2+r*b*d*p*a^2-m^2*q*a^2*b^2+2*c^3*r*a^2*m+2*m^2*q*c*a^3+r*p^3*b^2$ $2+r^2*c^3*n^2+a^2*c^2*p*d*q+a^2*c*p*b^2*m-12*a^2*c*p*n*r-3*a^2*d*q*b*c$ $*m^2 + 2*a^2 * d * q * c^2 * m * n - 2 * a^2 * m^2 * p^2 * b * d + 3 * a^2 * r * d^2 * n^2 * m - 5 * a^2 * r * d * n + 2 * m^2 * m + 2 * m^2 * m^2$ *c*m^2-10*a^2*r*b*d*m*n+4*a^2*r*b*d*m^3-a^2*d*m^2*p*b^2-2*a^2*m*p^3*c+ a^2*d^2*p*n*r+3*a^2*m*p^2*b*n+a^2*d*p*c*n*b*m+a^2*m*p^2*b*c-a^2*d*p^2* b*n-a^2*d^2*p*b*n^2-5*a^2*d^2*p*b*q-3*a^2*d*p^2*b*c+4*a^2*c*q*b*d*n-2* a^2*c*q*d^2*n^2+3*a^2*c^2*q*b*m-3*a^2*m*p*b^2*n+a^2*d^2*p^2*c*n-a^2*d* p^2*c^2*m+3*a^2*d^3*p*n*q+2*a^2*b*p*c*n^2-a^2*b*p*c^2*n+2*a^2*m^2*p*c* r+7*a^2*d^2*r*b*n-4*a^2*d^2*r*b*m^2-7*a^2*d^2*r*c*p-3*a^2*d*r*c^2*n+2* a^2*d*p*b^2*n+6*a^2*d*r*c*n^2+3*a^2*d^3*r*m*p+5*a^2*d^2*r*n*c*m-2*a^2* m^2*q*c^2*n+3*a^2*m^3*q*b*c+2*q*a^3*d*m*n+4*q*a^2*c*m*r+6*q*a^2*d*n*r-8*q*a^2*m*n*r+2*q*a^2*c*n^2*d*m+q*a^2*d*p*c*m^2+5*q*a^2*d*m^2*r+2*q*c* $n*a^3+5*q*d*p*a^3-3*q*a^3*d*m^3-8*q*a^3*m*p+4*q*a^3*m^2*n+2*q*a^2*b^2*n+2*q*a^3+m^2*n+2*q*a^3+m^2+n+2*q*a^3+n+2*q*$ $n-q*a^3*b*m+4*q*a^2*c^2*n^2-11*q*a^2*b*r+3*a^2*d*p^3*c+2*q*a^2*b*c*p-5$ $*q*m^2*p*a^2*b-8*q*d^2*r*m*a^2-a^2*d*p^3*n+a^2*d*p^2*r-4*a^2*m*p^2*r+a$ ^2*m*p^3*d^2-a^2*b*p*n^3-4*a^2*c*q*b^2-2*a^2*c^3*q*n+a^2*m^3*p*b^2-3*a `2*d*r*n^3-3*a^2*d^3*r*n^2-5*a^2*d*r*b^2+4*a^2*r*p*n^2-3*a^2*d^3*g^2*m +4*a^2*d^2*q^2*c-11*a^2*d*m*r^2-2*a^2*c^2*p^2*n+3*d^3*q*r*a^2+a^2*p^4+ 2*a^2*c*m*d*q^2+5*d*r*c*a^3-3*d^2*r*m*a^3+8*a^2*c^2*p*r+a^2*c*p^2*n^2+ a^2*m^2*p^2*c^2+5*a^2*m*q^2*b+2*m^3*r*a^2*c^2-2*q*a^2*c*n^3+2*q*a^2*c* p^2-4*q*a^2*n*p^2+8*q*a^2*p*r-q*a^2*d^2*p^2+3*a^3*d*p*m^2*n+2*a^3*d*p* c*m^2+a^5+2*a*p^2*r^2-3*a^3*d^2*p*m*n-a^3*c*n^2*d*m-d*p*a^3*b*m+6*a^2* $m*p*b*r-a^2*m^2*p*c*n*b+a^2*m*p*b*d*n^2-a^2*m*p^2*c*n*d-8*q*a^2*c*n*d*$ p+3*q*a^2*d*p*n^2+q*a^2*d*p^2*m+q*a^2*n^2*b*m-8*q*a^2*c*n*b*m-q*a^2*d*

> m²*n*b-3*q*a²*d²*p*m*n+4*q*a²*c*n*m*p+2*q*a²*p*b*n+4*a³*c*n*m*p+ a^3*c*n*d*p-5*a^3*c*m*d*q-a^3*c*n*b*m+a^3*d*m^2*n*b+a^4*m^4+2*a^4*n^2+ $m*p*n^2-2*a^3*m^3*p*c+3*a^3*n^2*b*m+a^3*d*p*n^2-5*a^3*d*p^2*m+3*a^3*d^2$ 2*m^2*q-2*a^3*c^2*m*p-3*q^2*a^2*c*m^2+2*q^2*c*n*a^2+3*a^4*d*m*n+m^2*p* a^3*b+7*a^3*d*m^2*r+a^3*c*n^2*m^2-2*a^3*b*d*n^2-5*a^3*p*b*n+3*a^3*b*c* p+4*a^3*b*d*q-6*a^3*c*m*r-7*a^3*d*n*r-q^2*d*p*a^2+4*q^2*a^2*m*p+3*a^2* d^2*m^2*q^2-8*a^2*b*d*q^2+2*a^2*d^2*n*q^2+6*q^2*a^3-4*a^2*q^3-4*q*a^4+ 5*a^3*b*r+a*d^2*n*q^3-4*a*q^2*p*r-a*d*p*q^3-a*d^3*q^3*m+10*q*d*p*a^2*b *m-3*a^2*d^2*p*m^2*r+7*a^2*d*r*b*c*m+2*a^2*d^2*m*p^2*b-3*a*r^2*c*n^2-2 *a*d^3*r^2*p+5*a*c*r*b^3+2*a*d^2*q^2*b^2+5*a*d^2*r^2*c^2-a*q*p^3*b+5*a *d*r^3+5*d^3*r^3*c-a*c*q^2*d^3*p+a*d*r*c^3*q-4*a*d^3*r^2*c*m-3*a*d*r*b *c^2*m*n-9*a*d^2*r^2*c*n-2*a*d^2*r*m*c*p^2+3*a*m^2*r*b*c^2*n+4*a*d*r*p *b*c*m^2-4*a*m^3*r*b^2*c+4*a*c*q^2*b^2+8*a*r^2*c^2*n-3*a*n*q^2*b^2+a*q $^2*c^2*n^2+3*a*d^4*r^2*n-2*a*c^4*r*p+a*b^2*q*n^3+a*r^2*d^2*q+7*a*q^2*b$ *r-2*a*c^2*r*p*b*m+2*a*c*r*d^3*p^2+13*a*d^2*r^2*b*m+a*c^2*q*b*d*m*p+4* $a*c^2*r*m*p^2-2*a*c^2*r*p*d^2*n-a*b*q*c^3*p+a*b*q*d^3*p^2-a*c^2*q*p*b*$ m^2+5*a*d^3*r*b*m*q+4*a*d*r*b^2*c*m^2-2*a*d^3*n*q^2*b-2*a*b^2*q*d^2*m* p+a*d*m^2*q*b^3+2*a*d*r*c^3*m*p-2*a*b^2*q*c*n^2+3*a*b^2*q*c*d*p-6*a*c* r*b^2*d*n+3*a*c*r*b*d^2*n^2+6*a*c*r*b*p^2-6*a*c^2*r*d*p^2+3*a*c^3*r*b* n-5*a*m*q^2*b^2*d-8*a*m*q*b^2*r-a*q^2*c*n*d*p-4*a*d^2*q^3*c+3*a*r^2*d^2 2*n^2-5*a*d^3*r^2*b-2*a*c^3*q^2*n-3*a*m*q^3*b-7*a*p*b*r^2-2*a*c*q^3*n+ 4*a*q*n*r^2-4*a*m^2*r^2*c^2-a*m^3*q*b^3+a*m^2*q^2*c^3+3*a*m^2*q^2*b^2-9*a*c*r*p*b^2+6*a*c^2*r*b*d*p-4*a*d^2*r*b*m*c*p-2*a*m^2*r*c^3*p+a*q^2* c*p^2-5*d*r^3*c^2+a*r*d^3*q^2-2*c^4*r^2*n+5*b*c*r^3-3*b*n*r^3-a*d^2*q* r*c^2*m+a*d^2*q^2*c^2*n-2*a*c^2*q^2*p*m-a*c*q*b^3*m+2*a*r^2*d*n*c*m+2* $a*d^2*q^2*m*b*n+3*a*m*q*b^3*n+2*a*m^2*q*b*c*r-2*a*d*q^2*b*n^2-a*m*q*b^2$ $2*d*n^2+a*m^2+a*m^2+q*c*n*b^2+3*a*d^2*q^2*b*c*m-a*d^2*q*b*c*n*p-a*d*q^2*c^3*$ m-4*a*d*q^2*c^2*b-7*a*d^2*q*r*c*b-a*d*q*c*n*b^2*m+a*d^2*q*b^2*n^2-3*a* d^4*q*r*p-5*a*d*r^2*c*b-10*a*r*p*b*d*q+2*a*r*c*n*d*p^2+4*a*d^2*r^2*c*m ^2-3*a*d^3*r^2*m*n+3*a*d*r^2*c^2*m+5*a*r*b*c*n*d*p+a*r*d*q*c^2*m^2+3*a *r*c^2*q*b+11*a*r*c*n*b^2*m+2*a*r^2*d^2*m*p-5*a*p*d*n*r^2-2*a*r*p*c^2* n^2+5*a*b*m*n*r^2-8*a*b*d*m^2*r^2-2*a*b*c*m*r^2+4*a*c*p*d*r^2+2*a*r*c 2*p*d*n*m-5*a*r*b*q*n^2+4*a*r*c^3*p*n+2*a*r*b*c*n*q-3*a*r*b*c*n^2*d*m+ 3*a*r*b*c*n^3-6*a*r*b*c^2*n^2+2*a*r*m*q^2*c-a*q*d*m*r^2+3*a*q*d*p^2*r+ $a*q*d*p*c*n*b*m+2*a*q*m*p^2*b*c-8*a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*d^2*p*n*r+a*q*d*p*c*m*r-3*a*q*$ p*b^2*n-3*a*q*d*p^2*b*c+a*q*d*p^2*b*n+a*b*d*n*r^2-8*a*r*p*c*n*b*m-2*a* $d*q*b^3*n-4*a*q*c^2*p*r-3*a*q*m*p*b^2*n-a*q*b*p*c*n^2+13*a*q*d*r*b^2+3$ *a*c^2*p*d*q^2+2*a*q*b*p*c^2*n-a*q*d^2*r*n*c*m+11*a*q*d^2*r*c*p-2*a*q* d*r*c^2*n+a*d^3*r*c*q*n+a*q*d*r*c*n^2+3*a*q*d^3*r*m*p-5*a*q*d^2*r*b*n-5*a*q*d^2*r*b*m^2-a*q*c*p*b^2*m+4*a*q*c*p*n*r-a*q*d^2*m*p^2*b+2*a*q*d* m^2*p*b^2+10*a*q*r*b*d*m*n+4*a*c*q^2*b*d*n-3*a*d*q^2*b*c*m^2-a*d*q^2*c ^2*m*n+a*c^2*q^2*b*m+a*d^2*p*b*q^2+a*q^2*c*n*b*m+a*d^2*p*c*m*q^2-a*m*p *b*d*q^2-3*a*r*c*d*q^2-a*r*d^2*m*q^2+2*a*q*m*p*b*r+a*q^2*d*n*r+3*a*q^2 *p*b*n+3*a*c*m*d*q^3+4*a*b*d*q^3+2*d^4*r^2*b*p+4*d*r^3*b*m+5*d^2*r^2*c *b^2+2*d*r*b^4*n-d^2*r*b^3*n^2-2*r*d*q*c*a^2+2*r*m*q*b*c^2*p-r*b*q*c*p ^2+3*r*d*p^2*b^2*c+r*b*a*n*p^2+r*b*d*p*q^2-r*b*a^2*m^2*n+r*b*a*d^2*p*m $*n-r*b*a*d*p*n^2-r*b*d^2*p*c*m*q+r*b*q*c*n*d*p-3*r*b*c^2*p*d*q-2*r*m*p$ ^2*b^2*c-r*d*p*b^3*n+r*a*d*m^2*n*b^2-r*a*n^2*b^2*m+2*r*m^2*p*a*b^2+r*d ^2*m*p^2*b^2+r*c*p*b^3*m-r*d*p*c*n*b^2*m-5*r*d*p*a*b^2*m-3*r*q*p*b^2*n +r*b^2*p*c*n^2-2*r*b^2*p*c^2*n+3*r*m*p*b^3*n-r*d*p^2*b^2*n-r*d^2*p*b^2 *q+r*m*p*b^2*d*q-2*r*d*m^2*p*b^3+5*r*q*b^2*c*p+r*a*p*b^2*n-d*r^2*c^3*m *n-4*d*r^2*b*c^2*m^2-d*r^2*p*c^2*n+r^2*c*q*d^2*n+d^2*r^2*p*c^2*m-r^2*p > *c*d*q+r^2*b*c^2*m*n+2*r^2*a*c*m*p+4*b*d*p*c*m*r^2+2*b*d^2*p*n*r^2-b*q

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> *d*n*r^2-6*b*d^2*r^2*c*p+6*b*d*r^2*c^2*n-3*b*d*r^2*c*n^2+b*c*p*n*r^2+7
  *b*r^2*c*d*q+b*r^2*d^2*m*q+3*b*d^2*r^2*n*c*m-5*m*q*b*c*r^2-d^5*r^3-7*d
  *r^2*b^2*c*m+3*d^2*r^2*b^2*n+3*d*r^3*c*n-4*d^2*r^3*c*m-2*b*d*p^2*r^2+3
  *b*q*p*r^2-3*b*c^2*p*r^2-d^3*q*r^2*b+7*r^2*b^2*p*d-2*r^2*q*c^2*n+3*d*r
   ^2*c^3*p+c^3*r^2*b*m-2*r*a*b^3*n+r*b*a^2*n^2+r*a^2*b^2*m+2*c^3*r^2*q+m
   ^2*r*a*b^3-3*m*r*b^4*n+2*d^2*r^2*b^2*m^2-3*m*p*b^2*r^2-5*r^2*b^2*d*m*n
   ^2*b^3*m+d^2*r*b^2*c*n*p+d*r*c*n*b^3*m-4*d*r*b^2*c*n*q-2*d^2*r*m*q*b^2
  *n+2*d*r*b^2*q*n^2+m^2*r^2*c^4-d*r*a*b^3*m+d*r*b*m*q*c^2*n-2*d^3*r^2*b
  *m*p-d^2*r*b*q*c^2*n+3*d*r^2*q*m*c^2-d^3*r*b*n*p*a+4*d^2*r^2*b*c^2*m+2
  *d*r*a^2*c*m*p-d^3*r^2*q*c*m-d^2*r*b*q^2*n-d^2*r*b^2*a*m*n-3*d^3*r^2*c
  *b*n+2*d^3*r*n*q*b^2-d*r^2*c^4*m-5*d*r^2*c^3*b+d^2*r^2*c^3*n-c^3*r*b*q
  *m^2+c^3*r*b*q*d*m+c^2*r*p*b^2*m^2+3*c*r*b^2*d*m^2*q-c^2*r*b^2*m*q-c^2
  *r*b^2*d*m*p-3*c*r*b^2*d^2*m*q-d*r^3*q+m^3*r*b^4-m*r*b^2*c*n*q-m^2*r*c
  *n*b^3+a*b^4*q-5*a*q^2*b*c*p-3*c*r*b*d*m*q^2-5*d*r^2*b^3-2*c*r^3*p-4*c
   ^2*r^2*q*d^2-d^3*r^3*n+c^5*r^2+2*a*c^2*q^3+c*r^2*d^4*q-c^2*r^2*d^3*p-2
  *c^3*r^2*m*p-d*m^2*r*b^4-2*d^3*m*r^2*b^2-5*a*c^3*r^2-3*q*b^2*r^2+a*b^2
   *q*c^2*n+b*r*c*q*d^3*p+2*b*r*c*q^2*n+b^2*r*c^3*p-4*b^2*r*d*q^2+5*b^3*r
   *d*m*q-3*b^3*r*c*d*p+2*b^3*r*d^2*m*p+3*b^2*r*a*d^2*p+4*b^2*r*d*q*c^2-2
   *b^3*r*d^2*q+3*b^3*r*n*q-3*b^3*r*m^2*q-b^3*r*c^2*n-b*r*c^4*q-b*r*d^4*q
  ^2-b^5*r-4*a*c^2*r*b^2*m-4*a*m*r^3+c^2*r^2*p^2+2*b*r*c^3*q*n-b*r*q*c^2
  *n^2+3*r*b^4*p-2*b*r*c^2*q^2-4*b^3*r*c*q-b^2*r*d^3*p^2+b*r*d^3*q^2*m+4
  *b*r*d^2*q^2*c+3*b^2*r*m*q^2+2*b^3*r*c*n^2+5*c^2*r^2*b^2-4*m*r*a^2*c^2
  *n+2*q^2*a^2*n^2-4*a^2*n*r^2-a^2*d^3*p^3+5*a^2*c*r^2-4*q*a^3*n^2-4*c^2
  *q^2*a^2+5*d^2*r^2*a^2-3*a^2*p^3*b+3*a^2*p^2*b^2+6*a^2*m^2*r^2+4*a^3*n
  *p^2-4*a^3*p*r+a^3*d^2*n^3+3*a^3*d^2*p^2+a^3*c^2*n^2+a^4*c*m^2-a^4*b*m
  -2*c*n*a^4-3*d*p*a^4-a^4*d*m^3+4*a^4*m*p-4*a^4*m^2*n+a^3*b^2*n-2*a^3*c
  *n^3-4*a^3*m^3*r-3*a^3*c*p^2+a^2*c^3*p^2+2*c^2*q*a^3+2*a^3*m^2*p^2-a^2
  *b^3*p+r^4-5*q^2*a^2*d*m*n+2*m*r*a^2*c*n^2+3*a*q*p^2*b^2-6*a*q*c*r^2-3
  *a*q*b^3*p-2*a*c*r*p^3+a*c^4*q^2-b*r*q^3-5*d^2*r^3*b):
> s := evalf(-B/((-A)^(5/4))):
87689146470958161238452336409696724026258808717657762183959
35195347548574366463800600883478827002618016282920794291762
12708124761783154018405570972981429024243773699800521309554
72771370661690862684267783555502528886912001289I
z := -s*hypergeom([1/5,2/5,3/5,4/5],[1/2,3/4,5/4],3125/256*s^4):
   and does solve Bring's Equation
   evalf(z^5-z-s);
                       .2\,10^{-199}\,I
> v := (-A)^(1/4)*z:
> undoing the Tschirhausian Transformation with Ferrari's method
```

```
1/12*(-36*c*d*b-288*y*c-288*a*c+108*b^2+108*a*d^2+108*y*d^2+8*c^3+12*s
   qrt(18*d^2*b^2*a+18*d^2*b^2*y+1152*d*b*y*a+240*d*b*y*c^2+240*d*b*a*c^2
   -54*c*d^3*b*a-54*c*d^3*b*y-864*y*c*a*d^2+81*b^4-768*y^3-768*a^3+12*d^3
> *b^3-2304*y^2*a+384*y^2*c^2-2304*y*a^2-48*y*c^4+384*a^2*c^2-48*a*c^4-3
  *d^2*b^2*c^2+576*d*b*y^2+576*d*b*a^2+768*y*a*c^2-54*c*d*b^3-432*y*c*b^
> 2-432*y^2*c*d^2-432*a*c*b^2-432*a^2*c*d^2+162*a*d^4*y+12*a*d^2*c^3+12*
> y*d^2*c^3+12*b^2*c^3+81*a^2*d^4+81*y^2*d^4))^(1/3)-12*(1/12*d*b-1/3*y-
  1/3*a-1/36*c^2)/((-36*c*d*b-288*y*c-288*a*c+108*b^2+108*a*d^2+108*y*d^
> 2+8*c^3+12*sqrt(18*d^2*b^2*a+18*d^2*b^2*y+1152*d*b*y*a+240*d*b*y*c^2+2
> 40*d*b*a*c^2-54*c*d^3*b*a-54*c*d^3*b*y-864*y*c*a*d^2+81*b^4-768*y^3-76
> 8*a^3+12*d^3*b^3-2304*y^2*a+384*y^2*c^2-2304*y*a^2-48*y*c^4+384*a^2*c^
  2-48*a*c^4-3*d^2*b^2*c^2+576*d*b*y^2+576*d*b*a^2+768*y*a*c^2-54*c*d*b^
  3-432*y*c*b^2-432*y^2*c*d^2-432*a*c*b^2-432*a^2*c*d^2+162*a*d^4*y+12*a
*d^2*c^3+12*y*d^2*c^3+12*b^2*c^3+81*a^2*d^4+81*y^2*d^4))^(1/3))+1/6*c:
 e := (d^2/4+2*g-c)^(1/2):
> f := (d*g-b)/(2*e):
  y1 := evalf(-1/4*d+1/2*e+1/4*sqrt(d^2-4*d*e+4*e^2+16*f-16*g)):
  y2 := evalf(-1/4*d+1/2*e-1/4*sqrt(d^2-4*d*e+4*e^2+16*f-16*g)):
  y3 := evalf(-1/4*d-1/2*e+1/4*sqrt(d^2+4*d*e+4*e^2-16*f-16*g)):
  v4 := evalf(-1/4*d-1/2*e-1/4*sqrt(d^2+4*d*e+4*e^2-16*f-16*g)):
  #now looking for the root that solves both the Quartic and the
  Quintic
> evalf(y1^5+m*y1^4+n*y1^3+p*y1^2+q*y1+r);
         -.67026202744450379693532757422639610^{-164}
         -.654404080888727575792151849018205210^{-164}I
> evalf(y2^5+m*y2^4+n*y2^3+p*y2^2+q*y2+r);
79728884502359326179958717804469326304764138514554230154130
71777591202599037 + 3.799270173513100973067261361820864694346
29426309746230089859721815008604541357486014586053426888274
63594103443888254180488811314627420955907635916342180888194 \\ \\
10407844984109417239968078437399449343508I
> evalf(y3^5+m*y3^4+n*y3^3+p*y3^2+q*y3+r);
-24471.05428711853877506730011254932432187314028124956751686236513
90151428933459177713132526785770767509573320541667847970373
90657774481757164355894965388511999107977673996588972265894 \\ \\
602403965918954074 - 104991.196955226425101886129850901911773
45822867816842849130775316078784322324983271682941787786394
33542591905831589669417285257948419066967216279675354717194
3376068083259295324383609618045156132I
> evalf(y4^5+m*y4^4+n*y4^3+p*y4^2+q*y4+r);
```

```
-2341.377040262803423112625582783776277016013819510961661548886093
09115127486417829160686034843307721067070191870848868493409\
55046992104827929943633431723898557859216192870129460155160
031024099248163764 - 2079.89649144663713312049506952871938130
57878789715505283966496178978569682763112316674586252688705
21416177694775900083918775690951432710491929905730153513372
85464090257339529672681164668936088649247I
   in this example y1 is the root we want, let it be the first root
of
  the Quintic, r1
> r1 := y1:
   factoring it out of the Quintic, leaving only the
   Quartic to solve
   dd := m+r1:
> cc := n+r1^2+m*r1:
> bb := p+r1*n+r1^3+m*r1^2:
   aa := q+r1*p+r1^2*n+r1^4+m*r1^3:
  yy := 0:
   gg :=
   1/12*(-36*cc*dd*bb-288*yy*cc-288*aa*cc+108*bb^2+108*aa*dd^2+108*yy*dd^
   2+8*cc^3+12*sqrt(18*dd^2*bb^2*aa+18*dd^2*bb^2*yy+1152*dd*bb*yy*aa+240*
   dd*bb*yy*cc^2+240*dd*bb*aa*cc^2-54*cc*dd^3*bb*aa-54*cc*dd^3*bb*yy-864*
   yy*cc*aa*dd^2+81*bb^4-768*yy^3-768*aa^3+12*dd^3*bb^3-2304*yy^2*aa+384*
   yy^2*cc^2-2304*yy*aa^2-48*yy*cc^4+384*aa^2*cc^2-48*aa*cc^4-3*dd^2*bb^2
   *cc^2+576*dd*bb*yy^2+576*dd*bb*aa^2+768*yy*aa*cc^2-54*cc*dd*bb^3-432*y
  y*cc*bb^2-432*yy^2*cc*dd^2-432*aa*cc*bb^2-432*aa^2*cc*dd^2+162*aa*dd^4
  *yy+12*aa*dd^2*cc^3+12*yy*dd^2*cc^3+12*bb^2*cc^3+81*aa^2*dd^4+81*yy^2*
   dd^4))^(1/3)-12*(1/12*dd*bb-1/3*yy-1/3*aa-1/36*cc^2)/((-36*cc*dd*bb-28
  8*yy*cc-288*aa*cc+108*bb^2+108*aa*dd^2+108*yy*dd^2+8*cc^3+12*sqrt(18*d
  d^2*bb^2*aa+18*dd^2*bb^2*yy+1152*dd*bb*yy*aa+240*dd*bb*yy*cc^2+240*dd*
  bb*aa*cc^2-54*cc*dd^3*bb*aa-54*cc*dd^3*bb*yy-864*yy*cc*aa*dd^2+81*bb^4
  -768*yy^3-768*aa^3+12*dd^3*bb^3-2304*yy^2*aa+384*yy^2*cc^2-2304*yy*aa^
   2-48*yy*cc^4+384*aa^2*cc^2-48*aa*cc^4-3*dd^2*bb^2*cc^2+576*dd*bb*yy^2+
   576*dd*bb*aa^2+768*yy*aa*cc^2-54*cc*dd*bb^3-432*yy*cc*bb^2-432*yy^2*cc
   *dd^2-432*aa*cc*bb^2-432*aa^2*cc*dd^2+162*aa*dd^4*yy+12*aa*dd^2*cc^3+1
   2*yy*dd^2*cc^3+12*bb^2*cc^3+81*aa^2*dd^4+81*yy^2*dd^4))^(1/3))+1/6*cc:
> ee := (dd^2/4+2*gg-cc)^(1/2):
> ff := (dd*gg-bb)/(2*ee):
> evalf(-1/4*dd+1/2*ee+1/4*sqrt(dd^2-4*dd*ee+4*ee^2+16*ff-16*gg)):
  = evalf(-1/4*dd+1/2*ee-1/4*sqrt(dd^2-4*dd*ee+4*ee^2+16*ff-16*gg)):
  yy3 :=evalf(
  -1/4*dd-1/2*ee+1/4*sqrt(dd^2+4*dd*ee+4*ee^2-16*ff-16*gg)):
   :=evalf(-1/4*dd-1/2*ee-1/4*sqrt(dd^2+4*dd*ee+4*ee^2-16*ff-16*gg)):
```

```
Do the roots of the Quartic satisfy the Quintic?
   evalf(yy1^5+m*yy1^4+n*yy1^3+p*yy1^2+q*yy1+r);
          -.670262027444503796935327574226455\,10^{-164}
          -.65440408088872757579215184899310^{-164}I
   evalf(yy2^5+m*yy2^4+n*yy2^3+p*yy2^2+q*yy2+r);
          -.67026202744450379693532757550068010^{-164}
          -.65440408088872757579215110^{-164}I
   evalf(yy3^5+m*yy3^4+n*yy3^3+p*yy3^2+q*yy3+r);
        -.67026202744450379693532757422586310^{-164}
         -.654404080888727575792151848999793410^{-164}I
   evalf(yy4^5+m*yy4^4+n*yy4^3+p*yy4^2+q*yy4+r);
        -.670262027444503796935327574247721\,10^{-164}
         -.654404080888727575792151849011506510^{-164}I
   They do. The five roots of the General Quintic equation are;
   r1 := r1;
r1 := .3774792310467799053705472069612095935444898011596747813301194
20080378897224176222806652440145386905941177688233725003087
630830436441090570208 - .466821003701321341760982840662657500
22049699904489626603055650351534241700234050153454121880890
26163375444738646870686021501830132473555311I\\
> r2 := yy1;
r2 := .0031152623959929454203531026680212305667581329306928935546952
66336690152313747955607980351588604625656879553707389663902
12760479641932886238545 - 6.515880062571684960427555456715739 \backslash
56190994901788567205002329694907535710898235149830470703576
86704347052944919179683683683770086547149287019201757498258
25560080670253184158055421829508023205091953137I
> r3 := yy2;
r3 := .0002806214035074929468234949530418045758551102470638537459914
15245436122740263002612260267725580120401195015191848713881 \setminus \\
06302776026675927402455 + 206.4894624353524787097721560130957
64283126100332544514609464387704273436398873493702755815031 \setminus \\
002277378139422837250633105266650324928524956067I
```

```
> r4 := yy3;
```

 $r5 := -.72595889777227526536114053450931580180921487705817712038968 \\ 19253477099050732262349844090357943118564985594979424058865 \\ 94863028299196345040937623833710124533628280968083361258468 \\ 09585577726102729053104 + .0295414051393285620556096511583438 \\ 97681502971818248058273446046883922394109889605481503149612 \\ 07883819262273820137279703374329110616481912768339996808670 \\ 5464942722848119647363844924230723372578903450I$

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